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Search Detail

Appl. 09/493701

Date	Type	Search
9 July 2003	A	Koll
3 August 2004	R	semantic meaning
	R	semantic meaning and probability
	R	document classification and semantic meaning
	SD	document classification and semantic meaning
	SD	document classification and semantic

09/493701

	Hits	Search Text	DBs	Time Stamp▽
1	0	707/100.ccls. and ((semantic or lexical) adj distance)	USPAT; US-PGPUB	2004/08/11 17:08
2	9	707/104.1.ccls. and ((semantic or lexical) adj distance)	USPAT; US-PGPUB	2004/08/11 17:08
3	16	707/5.ccls. and ((semantic or lexical) adj distance)	USPAT; US-PGPUB	2004/08/11 17:07
4	335	707/5.ccls. and (semantic or lexical)	USPAT; US-PGPUB	2004/08/11 16:54
5	1	"WO 2003098388 A2".did.	DERWENT	2004/08/06 13:06
6	1195 436	WO "2003098388" A2.did.	DERWENT	2004/08/06 13:05
7	0	"WO 03/098388"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/06 13:04
8	0	WO-03/098388-A2	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/06 13:04
9	22	((semantic\$2 or lexical\$2) adj (meaning or vector or position)) with possib\$8	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/06 13:03
10	5	((semantic\$2 or lexical\$2) adj (meaning or vector or position)) with probabilit\$4	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/06 09:53
11	423	semantic adj meaning	USPAT; US-PGPUB	2004/08/03 14:58
12	2	(semantic adj meaning) and (document adj classif\$9)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/03 14:58

	Hits	Search Text	DBs	Time Stamp▽
13	25	(US "6609087" B1 US "6453315" B1 US "6421675" B1 US "6324519" B1 US "6314419" B1 US "6311194" B1 US "6304864" B1 US "6298348" B1 US "6289353" B1 US "6289342" B1 US "6282538" B1 US "6278967" B1 US "6269361" B1 US "6233575" B1 US "6182063" B1 US "6175829" B1 US "6173261" B1 US "6169986" B1 US "6167397" A US "6161127" A US "6134553" A US "6134532" A US "6122647" A US "6119164" A US "6101515" A US "6101491" A US "6094649" A US "6073130" A US "6067552" A US "6055573" A US "6044375" A US "6038560" A	USPAT; US-PGPUB	2004/08/03 14:41
14	3	((semantic\$3 or lexical\$3) adj meaning) with probabilit\$5	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/03 14:22

	Hits	Search Text	DBs	Time Stamp▽
15	20	(US "6453315" B1 US "6421675" B1 US "6324519" B1 US "6314419" B1 US "6311194" B1 US "6304864" B1 US "6298348" B1 US "6289353" B1 US "6289342" B1 US "6282538" B1 US "6278967" B1 US "6269361" B1 US "6233575" B1 US "6182063" B1 US "6175829" B1 US "6173261" B1 US "6169986" B1 US "6167397" A US "6161127" A US "6134553" A US "6134532" A US "6122647" A US "6119164" A US "6101515" A US "6101491" A US "6094649" A US "6073130" A US "6067552" A US "6055573" A US "6044375" A US "6038560" A US "5987457" A	USPAT; US-PGPUB	2003/07/11 11:29

	Hits	Search Text	DBs	Time Stamp
16	36	(US "6453315" B1 US "6421675" B1 US "6324519" B1 US "6314419" B1 US "6311194" B1 US "6304864" B1 US "6298348" B1 US "6289353" B1 US "6289342" B1 US "6282538" B1 US "6278967" B1 US "6269361" B1 US "6233575" B1 US "6182063" B1 US "6175829" B1 US "6173261" B1 US "6169986" B1 US "6167397" A US "6161127" A US "6134553" A US "6134532" A US "6122647" A US "6119164" A US "6101515" A US "6101491" A US "6094649" A US "6073130" A US "6067552" A US "6055573" A US "6044375" A US "6038560" A US "5987457" A	USPAT; US-PGPUB	2003/07/11 11:28

	Hits	Search Text	DBs	Time Stamp
17	24	(US "6453315" B1 US "6421675" B1 US "6324519" B1 US "6314419" B1 US "6311194" B1 US "6304864" B1 US "6298348" B1 US "6289353" B1 US "6289342" B1 US "6282538" B1 US "6278967" B1 US "6269361" B1 US "6233575" B1 US "6182063" B1 US "6175829" B1 US "6173261" B1 US "6169986" B1 US "6167397" A US "6161127" A US "6134553" A US "6134532" A US "6122647" A US "6119164" A US "6101515" A US "6101491" A US "6094649" A US "6073130" A US "6067552" A US "6055573" A US "6044375" A US "6038560" A US "5987457" A	USPAT; US-PGPUB	2003/07/11 10:54
18	583	document\$1 adj (database or repository or library or archive) and retriev\$2 and (scan\$3 or ocr)	USPAT; US-PGPUB	2003/07/11 10:31
19	106	document\$1 adj (database or repository or library or archive) and retriev\$2 and (scan\$3 or ocr) and (semantic or lexical)	USPAT; US-PGPUB	2003/07/11 10:31
20	33	((price or charge or cost) near (keyword\$3))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/10 13:20
21	21	((auction) near (quer\$3))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/10 13:19
22	203	((cost or price or auction) near (quer\$3))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/10 13:17

	Hits	Search Text	DBs	Time Stamp▽
23	703	((cost or price or value) near (quer\$3))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/10 13:14
24	120	((cost or price or value) near (keyword\$1 or concept\$1)) and (semantic\$3 or lexical\$1)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/10 13:13
25	3	((sell or auction) adj (keyword\$1 or concept\$1)) and (semantic\$3 or lexical\$1)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/10 12:24
26	39	((semantic\$2 or lexical)) same (cost or price) and document and 707/\$.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/10 12:22
27	550	((semantic\$2 or lexical)) and document and 707/\$.ccls. and (cost or price)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/10 12:02
28	52	((semantic\$2 or lexical) adj database\$2) and (cost or price)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/10 12:01
29	4577	((semantic\$2 or lexical)) and (cost or price)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/10 12:01
30	9	((semantic\$2 or lexical) adj database\$2) and (advertisement or ad or banner)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/10 11:50
31	6	6298348.URPN.	USPAT	2003/07/10 11:49
32	5	6298348.URPN. and (cost or price)	USPAT	2003/07/10 11:49
33	18	("4546382" "4833308" "4972504" "5128752" "5201010" "5223924" "5227874" "5237620" "5285278" "5305196" "5327508" "5388165" "5430644" "5448471" "5592560" "5621812" "5638457" "5642485" "5644723" "5649114" "5659469" "5675662" "5687322" "5724521" "5754939" "5774170" "5774868" "5794210" "5832457" "5970469" "5974399" "6009410" "6014634" "6026370" "6035280" "6055573" "6185541" "6216129").PN. and advertise\$8	USPAT	2003/07/10 11:33

	Hits	Search Text	DBs	Time Stamp
34	17	("4546382" "4833308" "4972504" "5128752" "5201010" "5223924" "5227874" "5237620" "5285278" "5305196" "5327508" "5388165" "5430644" "5448471" "5592560" "5621812" "5638457" "5642485" "5644723" "5649114" "5659469" "5675662" "5687322" "5724521" "5754939" "5774170" "5774868" "5794210" "5832457" "5970469" "5974399" "6009410" "6014634" "6026370" "6035280" "6055573" "6185541" "6216129").PN. and advertise\$8 and (price or cost)	USPAT	2003/07/10 11:33
35	38	("4546382" "4833308" "4972504" "5128752" "5201010" "5223924" "5227874" "5237620" "5285278" "5305196" "5327508" "5388165" "5430644" "5448471" "5592560" "5621812" "5638457" "5642485" "5644723" "5649114" "5659469" "5675662" "5687322" "5724521" "5754939" "5774170" "5774868" "5794210" "5832457" "5970469" "5974399" "6009410" "6014634" "6026370" "6035280" "6055573" "6185541" "6216129").PN.	USPAT	2003/07/10 11:32
36	1	5325298.pn.	USPAT; US-PGPUB	2003/07/09 10:26
37	1	6453315.pn.	USPAT; US-PGPUB	2003/07/09 10:26
38	1	5325289.pn.	USPAT; US-PGPUB	2003/07/09 09:42
39	1	5619709.pn.	USPAT; US-PGPUB	2003/07/09 09:25
40	11	(banner adj ads) and bidding	USPAT; US-PGPUB	2002/10/28 12:18
41	80	internet and advertisement\$1 and bid\$1	USPAT	2002/10/28 12:18
42	3	internet same advertisement\$1 same bid\$1	USPAT	2002/10/28 12:18
43	1	6453315.pn.	USPAT; US-PGPUB	2002/10/24 11:03
44	10	("6101491" "6182063" "6134532" "6269361" "6026429" "6041326" "6094649" "5905862" "5999940" "5933822").pn.	USPAT; US-PGPUB	2002/01/31 09:01
45	37	((advertisement or (banner adj ad)) with quer\$4) and (price or cost)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/01/30 17:07

	Hits	Search Text	DBs	Time Stamp
46	57	(advertisement or (banner adj ad)) with quer\$4	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/01/30 17:06
47	110	(advertisement or (banner adj ad)) same quer\$4	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/01/30 16:33
48	644	semantic\$2 and (advertisement or ad or banner)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/01/30 16:31
49	0	(semantic adj distance) and (advertisement or ad or banner)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/01/30 16:30
50	35	semantic adj distance	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/01/30 16:29
51	1	("4839853").pn.	USPAT; US-PGPUB	2002/01/30 12:00
52	10	("6287765" "6128651" "6161127" "5778363" "5857179" "5970489" "6134553" "4358824" "5278980" "5440481").pn.	USPAT; US-PGPUB	2002/01/30 11:37
53	10	("6163778" "6119164" "6304864" "5845278" "6006225" "6009459" "6125361" "6141653" "6169986" "6321228").pn.	USPAT; US-PGPUB	2002/01/30 11:10

	Hits	Search Text	DBs	Time Stamp▽
54	10	("5886698" "5982369" "6055538" "6067552" "6122647" "6167397" "6311194" "6332135" "6336105" "6338050").pn.	USPAT; US-PGPUB	2002/01/29 15:34
55	10	("6253193" "5987457" "6044375" "6247021" "5499360" "5848410" "5826258" "5963949" "6073170" "6233575").pn.	USPAT; US-PGPUB	2002/01/29 15:34



STIC EIC 2100 128920 Search Request Form 15

Today's Date: 3 Aug 2004

What date would you like to use to limit the search?

Priority Date: 22 Sept 1999 Other: _____

Name Luke S Wassom

AU 2177 Examiner # 77895

Room # PK2-4D41 Phone 305-5706

Serial # 09/493701

Format for Search Results (Circle One):

☒ PAPER ☐ DISK ☐ EMAIL

Where have you searched so far?

☒ USP ☐ DWPI ☐ EPO ☐ JPO ☐ ACM ☐ IBM TDB

☐ IEEE ☐ INSPEC ☐ SPI Other _____

Is this a "Fast & Focused" Search Request? (Circle One) ☒ YES ☐ NO

A "Fast & Focused" Search is completed in 2-3 hours (maximum). The search must be on a very specific topic and meet certain criteria. The criteria are posted in EIC2100 and on the EIC2100 NPL Web Page at <http://ptoweb/patents/stic/stic-tc2100.htm>.

What is the topic, novelty, motivation, utility, or other specific details defining the desired focus of this search? Please include the concepts, synonyms, keywords, acronyms, definitions, strategies, and anything else that helps to describe the topic. Please attach a copy of the abstract, background, brief summary, pertinent claims and any citations of relevant art you have found.

A system of locating ^{text} documents whereby
^{text} documents are entered into a database and parsed with
~~the~~ possible semantic meanings identified, each with an associated
probability,
allowing the database to be queried and retrieving documents based
on the semantic distance from the query terms and the ~~document~~
text/documents, taking into account the probability values and
associated semantic meanings of the text/documents.

STIC Searcher Theresa Esterhelt

Phone 308-7795

Date picked up 7/4/04

9:15 am

Date Completed 7/4/04

12:00 pm



Set	Items	Description
S1	3144222	DOCUMENT? OR TEXT OR DATA OR INFORMATION
S2	48705	CONCEPT? OR IDEA? OR NOTION? OR PERCEPTION? OR THOUGHT?
S3	4425264	ORGANIZ? OR ORGANIS? OR CLASSIF? OR GROUP? OR CATEGOR? OR LAYOUT? OR ORDER? OR ARRANGEMENT? OR CLUSTER? OR MATCH? OR INSERT? OR ENTER OR POST? OR PLACE? OR PLACING
S4	1471182	DATABASE? OR DATA()BASE? OR SOFTWARE OR PROGRAM? OR APPLICATION? OR FILE? OR LEXICON OR DICTIONARY OR GLOSSARY OR VOCABULARY OR WORDBOOK OR TERMINOLOGY OR VOCABULARY
S5	1456160	PARSE? OR PARSING OR FRAGMENT? OR CHUNK? OR SEPARATE? OR BREAKOUT OR BREAK()OUT OR MAPPING OR ANALYZ? OR ANALYS? OR ITEMIZATION OR ENUMERAT? OR ORGANIZ? OR ORGANIS? OR MAPPED OR MAPS
S6	2294	SEMANTIC OR SEMANTICS
S7	825998	MEANING OR CONCEPT? OR DEFINITION OR DEFINE? OR DEFINING OR DESCRIB? OR STIPULAT? OR DESIGNAT?
S8	5967637	ASSOCIATE? OR LINK??? OR MATCH??? OR RELAT? OR JOIN? OR CONNECT? OR INTEGRAT?
S9	139779	PROBABILITY OR CHANCE OR LIKELIHOOD OR ODDS OR POSSIBILITY OR PROSPECT?
S10	1207453	RETRIEV? OR QUER? OR LOOKUP OR LOOK()UP OR SEARCH? OR SEEK? OR QUER? OR MATCH? OR QUEST? OR PURSU? OR FIND? OR RETRIEV? - OR FILTER?
S11	2855951	DISTANCE OR VALUE OR SPACE OR RELATIONSHIP OR CALCULAT? OR DYNAMIC() SCALING() FACTOR?
S12	190653	(S1 OR S2) AND S3 AND S4
S13	131	S12 AND S5 AND S6 AND S7
S14	250	S8 (3N) S9 AND S10 AND S11
S15	1	S13 AND S14
S16	34	S13 AND S11
S17	3	S14 AND S6 AND S7
S18	11	S6 AND S7 AND S8 AND S9 AND S11
S19	41	S15 OR S16 OR S17 OR S18
S20	36	S19 AND IC=G06F?

File 347:JAPIO Nov 1976-2004/Apr(Updated 040802)

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File 350:Derwent WPIX 1963-2004/UD,UM &UP=200449

(c) 2004 Thomson Derwent

20/5/4 (Item 4 from file: 347)
DIALOG(R) File 347:JAPIO
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06699291 **Image available**
DEVICE AND METHOD FOR GENERATING THESAURUS AND STORAGE MEDIUM RECORDING
THESAURUS GENERATION PROGRAM

PUB. NO.: 2000-285122 [JP 2000285122 A]
PUBLISHED: October 13, 2000 (20001013)
INVENTOR(s): NISHIO YUZO
APPLICANT(s): JAPAN RESEARCH INSTITUTE LTD
APPL. NO.: 11-089565 [JP 9989565]
FILED: March 30, 1999 (19990330)
INTL CLASS: G06F-017/30 ; G06F-017/28

ABSTRACT

PROBLEM TO BE SOLVED: To reduce the burden of work for registering a word on a thesaurus and registering **data** indicating a **semantic relationship**

SOLUTION: A sentence inputted while using an input device is **analyzed** by morpheme **analysis** and a word (noun) is extracted. When the extracted word is not registered on the thesaurus yet, that word is newly registered on the thesaurus. The inclusive relation of a character code is decided between the word newly registered on the thesaurus and the word already registered on the thesaurus. Corresponding to the decision result, the relation **data** indicating the **relationship** of a high- **order** (BT) or low- **order** (NT) **concept** between the newly registered word and the registered word are registered on the thesaurus.

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DIALOG(R) File 347:JAPIO
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05888706 **Image available**
DEVICE AND METHOD CANCELING **SEMANTIC** AMBIGUITY

PUB. NO.: 10-171806 [JP 10171806 A]
PUBLISHED: June 26, 1998 (19980626)
INVENTOR(s): RI KO
TAKEUCHI JUNICHI
APPLICANT(s): NEC CORP [000423] (A Japanese Company or Corporation), JP
(Japan)
APPL. NO.: 08-352633 [JP 96352633]
FILED: December 13, 1996 (19961213)
INTL CLASS: [6] G06F-017/27 ; G10L-003/00
JAPIO CLASS: 45.4 (INFORMATION PROCESSING -- Computer Applications); 42.5
(ELECTRONICS -- Equipment)
JAPIO KEYWORD: R107 (INFORMATION PROCESSING -- OCR & OMR Optical Readers);
R108 (INFORMATION PROCESSING -- Speech Recognition &
Synthesis)

ABSTRACT

PROBLEM TO BE SOLVED: To attain high accuracy and high performance ambiguity cancelation by canceling ambiguity while considering dependence **relation** between evidences appearing in contexts around a word in question.

SOLUTION: A statistic processing part 2 **calculates** four kinds of statistic information, i.e., the appearance **probability** of each word **meaning**, the appearance **probability** of evidences appearing in contexts around each word **meaning**, the co-occurrence **probability** between two evidences, and the mutual information quantity between two evidences, of a

. word in question in an inputted text and stores the **calculated** results in a statistic information storing part 3. A **semantic** ambiguity canceling part 5 specifies evidences appearing in contexts around the word in question, reads out the statistic information of four kinds from the storing part 3 and learns **probability** dependence consisting of evidences appearing in the contexts around each **meaning** of the word in question. Then, conditional **probability** under the conditions of contexts around each **meaning** of the word in question is **calculated** based on the learned **probability** dependence and the **meaning** of the word in question having the highest **calculated** conditional **probability** is outputted to an output part 6.

20/5/6 (Item 6 from file: 347)
DIALOG(R) File 347:JAPIO
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05720378 **Image available**
CONCEPT SIMILARITY DISCRIMINATION METHOD

PUB. NO.: 10-003478 [JP 10003478 A]
PUBLISHED: January 06, 1998 (19980106)
INVENTOR(s): NAKAMURA KEISUKE
MATSUZAWA KAZUMITSU
KASAHARA KANAME
APPLICANT(s): NIPPON TELEGR & TELEPH CORP <NTT> [000422] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 08-154466 [JP 96154466]
FILED: June 14, 1996 (19960614)
INTL CLASS: [6] **G06F-017/28**
JAPIO CLASS: 45.4 (**INFORMATION** PROCESSING -- Computer Applications)

ABSTRACT

PROBLEM TO BE SOLVED: To accurately **calculate** the similarity between the optional combinations of **concepts** and also to accurately discriminate the similarity of **concepts** by **calculating** a **semantic distance** between **concepts** based on the difference of probability distributions.

SOLUTION: The **text data** T described in a natural language or a form language and two **concept data** (a) and (b) are inputted. Thus, a partial **text** production process part A2 applies a morpheme **analysis** to the input **data** T and produces a partial **text** C, and a frequency distribution production process part A3 totalizes the texts C about all combinations of language sets W to be observed and produces a frequency distribution F. A probability distribution production process part A4 notices the **concepts** (a) and (b) and produces a probability distribution P {Pa (b), Pb (a)}, and a **semantic distance calculation** part A5 **calculates** a **semantic distance** D between both **concepts** (a) and (b) based on the probability distribution P. Then a **category** discrimination process part A6 produces and stores a **category** element correspondence table by a prescribed **category** discrimination rule and based on the **distance** D and then outputs this table via an output part A7.

20/5/7 (Item 7 from file: 347)
DIALOG(R) File 347:JAPIO
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04978972 **Image available**
METHOD FOR GENERATING DYNAMIC STEP NUMBER **CALCULATING** FORMULA

PUB. NO.: 07-271572 [JP 7271572 A]
PUBLISHED: October 20, 1995 (19951020)
INVENTOR(s): MATSUMOTO SHUICHI
APPLICANT(s): HITACHI SOFTWARE ENG CO LTD [472485] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 06-060471 [JP 9460471]
FILED: March 30, 1994 (19940330)

INTL CLASS: [6] G06F-009/06 ; G06F-011/28 ; G06F-011/34
JAPIO CLASS: 45.1 (**INFORMATION** PROCESSING -- Arithmetic Sequence Units

ABSTRACT

PURPOSE: To reduce processes, to easily correct a **program** and to automatically generate the **calculation** formula of a dynamic step number arranged from a macro point of view by setting generation conditions and **semantic information** in the source code of the generation object of an estimation **calculation** formula beforehand.

CONSTITUTION: In the source code 1 of a source **file** 101, a generation condition judgement sentence 2, a generation condition setting sentence 3, a loop factor specifying sentence 4 and a judgement condition **semantic** specifying sentence 5 set by a user are buried beforehand. A dynamic step number assembly processing 8 which is the processing **program** of a central processing unit 100 takes notice of the control structure of the **program**, **analyzes** the source code 1 and assembles the **calculation** formula for **calculating** the dynamic step number of respective parts based on the dynamic step number obtained by the dynamic step number **calculation** processing 11 of a basic block. Thus, the **calculation** formula of the dynamic step number for which the **meaning** of repetition and the **meaning** of case **classification** are easily understandable is generated.

20/5/8 (Item 8 from file: 347)
DIALOG(R) File 347:JAPIO
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04661039 **Image available**
DEVICE FOR **CALCULATING CONCEPTIONAL DISTANCE BETWEEN WORDS**

PUB. NO.: 06-332939 [JP 6332939 A]
PUBLISHED: December 02, 1994 (19941202)
INVENTOR(s): SEKINE SATOSHI
APPLICANT(s): MATSUSHITA ELECTRIC IND CO LTD [000582] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 05-119724 [JP 93119724]
FILED: May 21, 1993 (19930521)
INTL CLASS: [5] G06F-015/38
JAPIO CLASS: 45.4 (**INFORMATION** PROCESSING -- Computer **Applications**);
30.2 (MISCELLANEOUS GOODS -- Sports & Recreation

ABSTRACT

PURPOSE: To efficiently acquire **semantic** knowledge concerning a natural language by **calculating distance** scale as the **conceptional** similarity of words in the **analysis** and generation processing of the natural language.

CONSTITUTION: This device is provided with a matrix transformer part 11 for transforming the **value** of an element to the three kinds of values such as 'true,' 'false' and 'unknown' from the relation matrix of normalized words provided from the co-occurrence relation or the like of words in a sentence **data base**, inter-word **conceptional distance calculation** part 12 for **calculating the distance** between the words from the transformed relation matrix, relation matrix recalculation part 13 for **calculating** the new relation matrix by utilizing the inter-word **distance calculated** at the part 12, and the recalculation part 13 is provided with an interactive relation matrix correction part 14 for manually confirming the **calculated** result concerning the truth/false of relation is doubtful in **order** to cancel the non-certainness of the **calculated** result.

20/5/9 (Item 9 from file: 347)
DIALOG(R) File 347:JAPIO
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04233529 **Image available**

PROCESSING SYSTEM FOR EXPRESSING DEGREE IN NATURAL LANGUAGE

PUB. NO.: 05-225229 [JP 5225229 A]
PUBLISHED: September 03, 1993 (19930903)
INVENTOR(s): KAMEI SHINICHIRO
APPLICANT(s): NEC CORP [000423] (A Japanese Company or Corporation), JP
(Japan)
APPL. NO.: 04-026304 [JP 9226304]
FILED: February 13, 1992 (19920213)
INTL CLASS: [5] G06F-015/38 ; G06F-015/20
JAPIO CLASS: 45.4 (INFORMATION PROCESSING -- Computer Applications); 30.2
(MISCELLANEOUS GOODS -- Sports & Recreation)
JOURNAL: Section: P, Section No. 1659, Vol. 17, No. 677, Pg. 82,
December 13, 1993 (19931213)

ABSTRACT

PURPOSE: To process a phenomenon called 'implication of conversion,' the **semantic relation** between a negative sentence and a source positive sentence, the **possibility** of a question sentence and the answer and the modification **possibility** of a degree modifier adverb, for example, or the like on a computer by exactly **describing** and **calculating** the language action of degree expression.

CONSTITUTION: The **meaning** of a certain degree expression is expressed as a discrete **relative** position in a frame formed by one group of expressions paired with that expression. When expressing the **meaning** of a certain degree expression, both of ideographic **meaning** and **meaning** logically implicated in that degree expression are expressed. Further, when expressing the **meaning** of an expression adding any adjective and any degree modifying element to that adjective, the **meaning** is expressed while being divided into two levels of a level expressing the **meaning** of the adjective itself and a level expressing the **meaning** of the expression added the modifying element.

20/5/10 (Item 10 from file: 347)
DIALOG(R) File 347:JAPIO
(c) 2004 JPO & JAPIO. All rts. reserv.

04151939 **Image available**
SYNTAX ANALYSIS SYSTEM

PUB. NO.: 05-143639 [JP 5143639 A]
PUBLISHED: June 11, 1993 (19930611)
INVENTOR(s): MIYAZAKI TOSHIHIKO
INUI MASAHIRO
ITANI KOJI
KATO MASAACKI
APPLICANT(s): OKI ELECTRIC IND CO LTD [000029] (A Japanese Company or Corporation), JP (Japan)
OSAKA GAS CO LTD [000028] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 03-302992 [JP 91302992]
FILED: November 19, 1991 (19911119)
INTL CLASS: [5] G06F-015/38
JAPIO CLASS: 45.4 (INFORMATION PROCESSING -- Computer Applications);
30.2 (MISCELLANEOUS GOODS -- Sports & Recreation)
JOURNAL: Section: P, Section No. 1619, Vol. 17, No. 532, Pg. 67,
September 24, 1993 (19930924)

ABSTRACT

PURPOSE: To select the validest syntax tree with a high precision at the time of obtaining plural syntax trees by syntax **analysis** .

CONSTITUTION: A property 9c as the grammatical and **semantic** origin of each word is **described** . A method 10b which **calculates** properties of higher- **order** elements in accordance with properties of lower- **order** elements of phrase structure rules is **described** correspondingly to each

phrase structure rule. Frequency **information** 10c for combination patterns of properties is **described** correspondingly to each phrase structure rule. First, the property of each node is **calculated** in accordance with the **calculating** method 10b with respect to a syntax tree (9a). The validity index of each phrase structure rule is **calculated** in accordance with obtained property **information** and frequency **information** 10c (9b). An average of validity indexes of respective phrase structure rules is **calculated** (9c). The syntax tree whose average validity index is highest is selected from plural syntax trees.

20/5/11 (Item 11 from file: 347)
DIALOG(R)File 347:JAPIO
(c) 2004 JPO & JAPIO. All rts. reserv.

04036481 **Image available**

METHOD FOR EXPRESSING TENSE IN **SEMANTIC ANALYSIS** OF NATURAL LANGUAGE

PUB. NO.: 05-028181 [JP 5028181 A]
PUBLISHED: February 05, 1993 (19930205)
INVENTOR(s): YAMAOKA TAKUMI
APPLICANT(s): MEIDENSHA CORP [000610] (A Japanese Company or Corporation),
JP (Japan)
APPL. NO.: 03-184276 [JP 91184276]
FILED: July 24, 1991 (19910724)
INTL CLASS: [5] **G06F-015/38**
JAPIO CLASS: 45.4 (**INFORMATION PROCESSING -- Computer Applications**);
30.2 (MISCELLANEOUS GOODS -- Sports & Recreation
JOURNAL: Section: P, Section No. 1556, Vol. 17, No. 311, Pg. 15, June
14, 1993 (19930614)

ABSTRACT

PURPOSE: To perform **semantic analysis** without fail while finely expressing the difference of the tense between sentences and between phrases by using a means for expressing tense based on the **relationship** of phrase objects in the case of **semantic analysis** of a sentence.

CONSTITUTION: A phrase object is generated in a **database**, and the **order** of the phrase objects is expressed using the tense by giving the high and low **relationship** to the flow of time in the generation of the phrase object. Further, when the sure tense in the sentence, for example, **data** and time are expressed, more accurate tense expression can be obtained by **defining** it as one of the attributes of the phrase object. Thus, the difference of the tens between phrases and between sentences can be expressed by generating the phrase object. Moreover, the tense **relationship** of more than two phrases and sentences can be **analyzed**.

20/5/12 (Item 12 from file: 347)
DIALOG(R)File 347:JAPIO
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03557765 **Image available**

DEVICE FOR AUTOMATICALLY DETECTING AND CORRECTING ERROR IN JAPANESE SENTENCE

PUB. NO.: 03-220665 [JP 3220665 A]
PUBLISHED: September 27, 1991 (19910927)
INVENTOR(s): OKU MASAHIRO
APPLICANT(s): NIPPON TELEGR & TELEPH CORP <NTT> [000422] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 02-016567 [JP 9016567]
FILED: January 26, 1990 (19900126)
INTL CLASS: [5] **G06F-015/20**
JAPIO CLASS: 45.4 (INFORMATION PROCESSING -- Computer Applications)
JAPIO KEYWORD: R139 (INFORMATION PROCESSING -- Word Processors)
JOURNAL: Section: P, Section No. 1291, Vol. 15, No. 507, Pg. 164,

December 20, 1991 (19911220)

ABSTRACT

PURPOSE: To detect the homonym error of a single word by extracting the objective case of verification shown by a verification object case determination dictionary out of a clause to modify the objective word of verification and verifying a **connecting relation** in the manner of **semantics** between the **semantic** category equipped with this objective case and the objective word of verification.

CONSTITUTION: The presence / absence of the **connecting relation** in the manner of **semantics** between the appearance of the verification object word and the **semantic** category equipped with case elements to be shown by a verification object case determination dictionary 7 out of the clause to modify the objective word of verification is **calculated** while **retrieving** a **semantic connection** dictionary 8, to which these **connection possibility** information are **described** in advance, with the appearance of the verification object word and when there is no **connecting relation** in the manner of **semantics**, the objective word of verification is detected as homonym error. In respect to the detected homonym error, a word equipped with the same reading is extracted as a correction candidate and this correction candidate is replaced with the word which is verified as the homonym error. Then, verification is executed by using the **semantic connection relation** and the **connectable** correction candidate is **defined** as a correct candidate to the homonym error. Thus, only the correct candidate of the homonym error can be extracted.

20/5/13 (Item 13 from file: 347)
DIALOG(R) File 347:JAPIO
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03209475 **Image available**
KNOWLEDGE EXPRESSION SYSTEM BY SENTENCE IN NATURAL LANGUAGE INPUT
INTERACTIVE **INFORMATION RETRIEVAL**

PUB. NO.: 02-184975 [JP 2184975 A]
PUBLISHED: July 19, 1990 (19900719)
INVENTOR(s): NISHIYAMA TOSHIO
MATSUO HIROSHI
APPLICANT(s): NIPPON TELEGR & TELEPH CORP <NTT> [000422] (A Japanese
Company or Corporation), JP (Japan)
APPL. NO.: 01-005279 [JP 895279]
FILED: January 11, 1989 (19890111)
INTL CLASS: [5] **G06F-015/40**
JAPIO CLASS: 45.4 (**INFORMATION PROCESSING -- Computer Applications**)
JOURNAL: Section: P, Section No. 1114, Vol. 14, No. 465, Pg. 127,
October 09, 1990 (19901009)

ABSTRACT

PURPOSE: To indicate a similar **definition** sentence based on the **semantic** collation between a desired input sentence and **definition** sentences to a user and to execute retrieval with a desired retrieval key by **defining** the retrieval key by a sentence and making this into a knowledge base.

CONSTITUTION: When an input sentence to indicate retrieval desire is inputted from an input processing part 1, the **semantic category** of the morpheme of the input sentence is identified by a morpheme **analysis** processing part 3 and a **meaning analysis** processing part 4, and next, the **semantic categories** of the morphemes of the **definition** sentences are similarly identified also for the **definition** sentences for the retrieval key of a knowledge base part 2. For the **semantic categories** of these morphemes, similarity degree **calculation** is executed in a **semantic** collation processing part 6 by using a thesaurus 5, and the similarity degrees between the input sentence and the **definition** sentences are obtained. In a sorting processing part 7, sorting is executed for the **definition** sentences in sequence from the **definition** sentence

having the highest similarity degree, the sorted result is indicated to the user by a result display part 8, and the **definition** sentence indicated in a selection processing part 9 is outputted to a next retrieval key conversion processing part 10. In the retrieval key conversion processing part 10, the **definition** sentence is converted into the retrieval key corresponding to the **definition** sentence, and the converted retrieval key is outputted to a retrieval processing part 11. Thus, redefinition and knowledge input by the user can be easier without giving any special inference mechanism to the subject system.

20/5/17 (Item 4 from file: 350)
DIALOG(R) File 350:Derwent WPIX
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014957065 **Image available**
WPI Acc No: 2003-017579/200301
Related WPI Acc No: 1999-277129
XRPX Acc No: N03-013465

Free- text medical data encoding method e.g. for X-ray report, involves employing Bayesian network to infer concepts , based on probabilistic calculations used for slotting and translating words
Patent Assignee: CHRISTENSEN L M (CHRI-I); GUNDERSEN M L (GUND-I); HAUG P J (HAUG-I); KOEHLER S B (KOEH-I); VAN BREE R E (VBRE-I)
Inventor: CHRISTENSEN L M; GUNDERSEN M L; HAUG P J; KOEHLER S B; VAN BREE R E

Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20020128816	A1	20020912	US 9760567	A	19970930	200301 B
			US 98164048	A	19980930	
			US 2001911976	A	20010723	

Priority Applications (No Type Date): US 9760567 A 19970930; US 98164048 A 19980930; US 2001911976 A 20010723

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20020128816	A1		15	G06F-017/28	Cont of application US 9760567
					Cont of application US 98164048
					Cont of patent US 6292771

Abstract (Basic): US 20020128816 A1

NOVELTY - A free- text data comprising words, grammar, syntax, semantic relationship between words, is received. Synonyms and spelling of the words are checked. The syntax is passed and the grammar is transformed. Concepts are inferred from the data , based on Bayesian network managing probabilistic calculations which are used for slotting and translating the words. An encoded representation of the received data is created and stored in a database .

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for the following:

- (1) Encoded medical information provision method;
- (2) Encoded medical information provision system; and
- (3) Free- text information encoding system.

USE - For capturing concepts from free- text medical data e.g. X-ray report, free- text diagnosis.

ADVANTAGE - By employing Bayesian network to map the groups of words and phrases, concepts are inferred efficiently, thereby bridging the gap between free- text and coded medical data and improving accuracy of encoding the free- text data .

DESCRIPTION OF DRAWING(S) - The figure shows the flowchart explaining the natural language parsing process.

pp; 15 DwgNo 3/7

Title Terms: FREE; TEXT ; MEDICAL; DATA ; ENCODE; METHOD; RAY; REPORT;
EMPLOY; BAYESIAN; NETWORK; INFER; CONCEPT ; BASED; PROBABILITY ;
CALCULATE ; SLOT; TRANSLATION; WORD
Derwent Class: S05; T01

International Patent Class (Main): G06F-017/28
File Segment: EPI

20/5/18 (Item 5 from file: 350)
DIALOG(R) File 350:Derwent WPIX
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014891410 **Image available**
WPI Acc No: 2002-712116/200277
XRPX Acc No: N02-561687

Meaning -based information retrieval method involves calculating semantic distance between concepts by applying scaling factor to semantic path based on relationship between concepts

Patent Assignee: APPLIED SEMANTICS INC (SEMA-N)

Inventor: ELBAZ G I; WEISSMAN A J

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 6453315	B1	20020917	US 99155667	A	19990922	200277 B
			US 99431760	A	19991101	

Priority Applications (No Type Date): US 99155667 P 19990922; US 99431760 A 19991101

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6453315	B1	15	G06F-017/30	Provisional application US 99155667	

Abstract (Basic): US 6453315 B1

NOVELTY - Several concepts are organized according to their meaning, into a lexicon that defines elements of a semantic space. A semantic distance representing closeness in meaning between concepts is calculated by evaluating steps along a semantic path between concepts and applying a dynamic scaling factor to the steps based on relationship between concepts at each step.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for the following:

- (1) Data set searching method; and
- (2) Information handling system.

USE - For meaning-based information retrieval for allowing users to locate information that is close in meaning to concepts searched in world wide web (WWW).

ADVANTAGE - By calculating the semantic distance that represents closeness in meaning between concepts, the users are enabled to search for documents or sites in a meaning-based fashion. Hence, the users are enabled to quickly locate relevant and useful documents or sites.

DESCRIPTION OF DRAWING(S) - The figure illustrates the bond strength and semantic distance between concepts.

pp; 15 DwgNo 3/5

Title Terms: MEANING ; BASED; INFORMATION ; RETRIEVAL; METHOD; CALCULATE ; DISTANCE ; CONCEPT ; APPLY; SCALE; FACTOR; PATH; BASED; RELATED; CONCEPT

Derwent Class: T01

International Patent Class (Main): G06F-017/30

International Patent Class (Additional): G06F-007/00

File Segment: EPI

20/5/21 (Item 8 from file: 350)
DIALOG(R) File 350:Derwent WPIX
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014374043 **Image available**
WPI Acc No: 2002-194746/200225
XRPX Acc No: N02-147886

Estimating method for building custom architectural variations in skeletal house plans organizing building construction information into semantic database

Patent Assignee: PICKENS W E (PICK-I)

Inventor: PICKENS W E

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 6345258	B1	20020205	US 9768999	P	19971230	200225 B
			US 98220598	A	19981228	

Priority Applications (No Type Date): US 9768999 P 19971230; US 98220598 A 19981228

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6345258	B1	16	G06F-017/00		Provisional application US 9768999

Abstract (Basic): US 6345258 B1

NOVELTY - The method involves **organizing** building construction **information** into a **semantic database** with objects, relationships between the objects and roles **defined** by combinations of the objects and the relationships.

The annual curve object and the annual sales object have a **pace relationship** comprising a monthly estimate role.

DETAILED DESCRIPTION - The method involves further providing to the **database** a customer object, a lot object, a county object, a superintendent object, an annual sales object, an annual curve object, a deposit object, a mortgage object, an insurance object, a title object, an appraisal object, a salesperson object, a bank object, an entry object, a subphase object, a telephone number object, a contact object, a person object and an item number object.

INDEPENDENT CLAIMS are included for

(1) a method of providing costing and **data** on preselected skeletal home plans

(2) an **information** system apparatus

(3) a new home **defining**, costing and selling system

(4) a method of providing **information** for profitability and timely pricing.

USE - For **information** system used in construction of new homes.

ADVANTAGE - Provides and supports state-of-the-art **software** products and services for homebuilding industry to manage and maintain all operating **information** in single, comprehensive **database**.

DESCRIPTION OF DRAWING(S) - The figure shows part of the overall Meta Model for the system.

pp; 16 DwgNo 7/11

Title Terms: ESTIMATE; METHOD; BUILD; CUSTOM; ARCHITECTURE; VARIATION;

SKELETON; HOUSE; PLAN; BUILD; CONSTRUCTION; **INFORMATION ; DATABASE**

Derwent Class: T01

International Patent Class (Main): G06F-017/00

File Segment: EPI

20/5/23 (Item 10 from file: 350)

DIALOG(R) File 350:Derwent WPIX

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014079779 **Image available**

WPI Acc No: 2001-563993/200163

XRPX Acc No: N01-419776

Likelihood **symptom numerical value generating process for diagnosing medical condition, involves providing numerical statement of qualitative expression, to determine particular symptom of disease**

Patent Assignee: SIMULCONSULT INC (SIMU-N)

Inventor: SEGAL M M

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
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Priority Applications (No Type Date): US 98107885 A 19980630

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6212519	B1		16	G06F-017/30	

Abstract (Basic): US 6212519 B1

NOVELTY - A qualitative expression of **likelihood** having a term and **semantic** form **related** to qualitative expression are identified. A numerical **value** of **probability** and formula for processing the term is identified. The numerical **value** is processed to provide a numerical statement of the **likelihood**, to determine a particular symptom of disease.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a system for generating database of statistical data.

USE - For diagnosing medical conditions for determining particular disease.

ADVANTAGE - Provides a more precise measure of statistical **meaning**, by evaluating qualitative expressions of **likelihood**.

DESCRIPTION OF DRAWING(S) - The figure shows the user interface of database generating system.

pp; 16 DwgNo 2/7

Title Terms: SYMPTOM; NUMERIC; **VALUE**; GENERATE; PROCESS; DIAGNOSE; MEDICAL; CONDITION; NUMERIC; STATEMENT; QUALITATIVE; EXPRESS; DETERMINE; SYMPTOM; DISEASE

Derwent Class: S05; T01

International Patent Class (Main): **G06F-017/30**

File Segment: EPI

20/5/24 (Item 11 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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013989201 **Image available**

WPI Acc No: 2001-473415/200151

Apparatus and method for searching information using concept classification network

Patent Assignee: KOREA ELECTRONICS & TELECOM RES INST (KOEL-N)

Inventor: CHA G H; CHAE Y S; LEE H A; PARK J D

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
KR 2001008962	A	20010205	KR 9927068	A	19990706	200151 B

Priority Applications (No Type Date): KR 9927068 A 19990706

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
KR 2001008962	A		1	G06F-017/30	

Abstract (Basic): KR 2001008962 A

NOVELTY - An apparatus and method for searching **information** using a **concept classification** network is provided to search desired **information** for a user with a natural language sentence.

DETAILED DESCRIPTION - A multimedia **information** natural language search apparatus is comprised of a natural language sentence input device(101), an input sentence **analysis** part(11), a **data** storage part(12), a search processing part(13) and an output device(108). The input sentence **analysis** part(11) consists of a morpheme **analyzer** (102), a sentence structure **analyzer** (103) and a **semantic analyzer** (104). The **data** storage part(12) consists of a **dictionary** storage device(109), a **concept classification** network storage device(110) and a multimedia **database** (111). The search processing part(13) consists of a **semantic information** extractor(105), a record searcher(106) and a response generator(107). If the natural language sentence input device(101) transmits a search condition to express

through a natural language sentence inputted from a user to the input sentence **analysis** part(11), the input sentence **analysis** part(11) compares a sentence inputted from the user with the **data** of the **dictionary** storage device(109) and **analyzes** it through the morpheme **analyzer** (102), the sentence structure **analyzer** (103) and the **semantic analyzer** (104) sequentially. The **semantic information** extractor(105) of the search processing part(13) compares the **data** output from the **semantic analyzer** (104) with the **data** of the **concept classification** network storage device(110) and extracts a **semantic information value** .

pp; 1 DwgNo 1/10

Title Terms: APPARATUS; METHOD; SEARCH; **INFORMATION** ; **CONCEPT** ; **CLASSIFY** ; NETWORK

Derwent Class: T01

International Patent Class (Main): **G06F-017/30**

File Segment: EPI

20/5/25 (Item 12 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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013899175 **Image available**

WPI Acc No: 2001-383388/200141

XPX Acc No: N01-281294

Content-based digital image classification involves identifying image class associated with specific classification region containing feature vector based on low level features describing semantic content of image

Patent Assignee: STMICROELECTRONICS SRL (SGSA); SGS THOMSON MICROELTRN SARL (SGSA)

Inventor: BRAMBILLA C; CIOCCA G; DE PONTI M; SCHETTINI R; VALSASNA A

Number of Countries: 026 Number of Patents: 004

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 1102180	A1	20010523	EP 2000830029	A	20000120	200141 B
JP 2001195592	A	20010719	JP 2000350169	A	20001116	200145
IT 1311443	B	20020312	IT 99T0996	A	19991116	200250
JP 3481911	B2	20031222	JP 2000350169	A	20001116	200401

Priority Applications (No Type Date): IT 99T0996 A 19991116

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

EP 1102180 A1 E 12 G06F-017/30

Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT

LI LT LU LV MC MK NL PT RO SE SI

JP 2001195592 A 11 G06T-007/00

IT 1311443 B A61B-000/00

JP 3481911 B2 11 G06T-007/00 Previous Publ. patent JP 2001195592

Abstract (Basic): EP 1102180 A1

NOVELTY - The low level features **describing semantic** content of an image are **defined** . The feature **space defined** by features is splitted into number of classification regions with feature vector. The image is indexed to extract feature vector components using low level features. The image class **associated** with specific classification region containing extracted feature vector, is identified.

USE - For content-based digital image classification.

ADVANTAGE - The analysis of high number of pixels of an image is provided with smaller exploitation of computational resources based on digital image classification. The image analysis is highly optimized and modular by classifying the images into different regions based on the content of images. Extremely robust so far, as the use of a tree structured classifier eliminates entirely the **possibility** of not taking into consideration particular cases that might arise in images.

DESCRIPTION OF DRAWING(S) - The figure shows the flowchart of digital image classification method.

pp; 12 DwgNo 1/2
Title Terms: CONTENT; BASED; DIGITAL; IMAGE; CLASSIFY; IDENTIFY; IMAGE;
CLASS; **ASSOCIATE** ; SPECIFIC; CLASSIFY; REGION; CONTAIN; FEATURE; VECTOR;
BASED; LOW; LEVEL; FEATURE; **DESCRIBE** ; CONTENT; IMAGE
Derwent Class: P31; T01
International Patent Class (Main): A61B-000/00; **G06F-017/30** ; G06T-007/00
File Segment: EPI; EngPI

20/5/26 (Item 13 from file: 350)
DIALOG(R) File 350:Derwent WPIX
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013540014 **Image available**
WPI Acc No: 2001-024220/200103
XRPX Acc No: N01-018934

Word string probability modification for speech recognition system, involves modifying probabilities of word strings based on semantic values matching to suitable semantic tag, when one external condition is true

Patent Assignee: SPEECHWORKS INT INC (SPEE-N)
Inventor: BARNARD E; DAHAN J; METZGER M J; PHILLIPS M S
Number of Countries: 028 Number of Patents: 007
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 200051106	A1	20000831	WO 2000US4810	A	20000225	200103 B
AU 200033774	A	20000914	AU 200033774	A	20000225	200103
EP 1163664	A1	20011219	EP 2000911965	A	20000225	200206
			WO 2000US4810	A	20000225	
JP 2002538534	W	20021112	JP 2000601630	A	20000225	200275
			WO 2000US4810	A	20000225	
TW 480472	A	20020321	TW 2000103429	A	20000225	200308
US 6519562	B1	20030211	US 99258012	A	19990225	200314
US 20040006465	A1	20040108	US 99258012	A	19990225	200404
			US 2003364298	A	20030210	

Priority Applications (No Type Date): US 99258012 A 19990225; US 2003364298 A 20030210

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200051106	A1	E	34	G10L-015/14	
				Designated States (National): AU CA CN JP KR MX SG	
				Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE	
AU 200033774	A				Based on patent WO 200051106
EP 1163664	A1	E		G10L-015/14	Based on patent WO 200051106
				Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE	
JP 2002538534	W		38	G06F-017/28	Based on patent WO 200051106
TW 480472	A			G10L-015/14	
US 6519562	B1			G10L-015/08	
US 20040006465	A1			G10L-015/00	Cont of application US 99258012 Cont of patent US 6519562

Abstract (Basic): WO 200051106 A1

NOVELTY - The dynamic **semantic** rules are created based on external conditions about the context in which the speech recognizer is used. If one of the conditions is true currently, the **probability** values of word strings **associated** with **semantic** values that **match** corresponding **semantic** tag are modified.

DETAILED DESCRIPTION - The dynamic **semantic** rules which **defines** the change in **probability** values when one of the **semantic** values **matches** a predetermined **semantic** tag, are created and stored. An INDEPENDENT CLAIM is also included for **probability** value modifying program.

USE - For modifying **probability** value **associated** with word strings recognized by speech recognizer.

ADVANTAGE - The **semantic** information can be used in resolving ambiguities within the recognizer, hence performance of recognizer is improved.

DESCRIPTION OF DRAWING(S) - The figure shows the flow chart explaining speech recognition processing method.

pp; 34 DwgNo 2/3

Title Terms: WORD; STRING; **PROBABILITY** ; MODIFIED; SPEECH; RECOGNISE; SYSTEM; MODIFIED; **PROBABILITY** ; WORD; STRING; BASED; **VALUE** ; **MATCH** ; SUIT; TAG; ONE; EXTERNAL; CONDITION; TRUE

Derwent Class: P86; W04

International Patent Class (Main): **G06F-017/28** ; G10L-015/00; G10L-015/08; G10L-015/14

International Patent Class (Additional): G10L-015/10; G10L-015/18

File Segment: EPI; EngPI

20/5/27 (Item 14 from file: 350)
DIALOG(R) File 350:Derwent WPIX
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013513881 **Image available**

WPI Acc No: 2000-685827/200067

XRPX Acc No: N00-506956

Semantic **characterization assignment system to content stream of computer systems**, has profile defining **topological vector space** corresponding to **semantic records**, that is associated with **tokens**

Patent Assignee: NOVELL INC (NOVE-N)

Inventor: CARTER S R; JENSEN D C; LAVANGE D H

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 6108619	A	20000822	US 98109804	A	19980702	200067 B

Priority Applications (No Type Date): US 98109804 A 19980702

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
US 6108619	A	11	G06F-017/27	

Abstract (Basic): US 6108619 A

NOVELTY - Content stream having several phrases in the network is **associated** with the principals of network. Each token has metadata about the phrases **associated** with the respective tokens. Each profile **defining** topological vector **space** corresponding to **semantic** records **associated** with profile and principal, is **associated** with the tokens.

DETAILED DESCRIPTION - A token dictionary and profile store have association between tokens and phrases, and profiles and its corresponding tokens respectively. The profile **defines** **probability** density function within topological vector **space** . INDEPENDENT CLAIMS are also included for the following:

(a) method for assigning **semantic** characterization to content stream;

(b) program product

USE - For assigning **semantic** characterization of content streams **related** to computer e.g. personal computer, workstations, servers, main frames, embedded systems, microprocessors, discrete logic systems, analog systems, microelectronics.

ADVANTAGE - As memory is non-volatile, data is retained in absence of power so that information is available when power is restored.

DESCRIPTION OF DRAWING(S) - The figure shows the flow diagram of possible correlation between principal, content stream, tokens/profiles, **semantic** records.

pp; 11 DwgNo 2/6

Title Terms: ASSIGN; SYSTEM; CONTENT; STREAM; COMPUTER; SYSTEM; PROFILE; **DEFINE** ; TOPOLOGICAL; VECTOR; **SPACE** ; CORRESPOND; RECORD; **ASSOCIATE** ; TOKEN

Derwent Class: T01

International Patent Class (Main): G06F-017/27
File Segment: EPI

20/5/28 (Item 15 from file: 350)
DIALOG(R) File 350:Derwent WPIX
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013510660 **Image available**
WPI Acc No: 2000-682606/200067
XRPX Acc No: N00-505394

Generation apparatus for thesaurus has registration unit which registers relationship data showing higher order relationship or lower order conception between novel registration word and registered word

Patent Assignee: NIPPON SOGO KENKYUSHO KK (NISO-N)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 2000285122	A	20001013	JP 9989565	A	19990330	200067 B

Priority Applications (No Type Date): JP 9989565 A 19990330

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
JP 2000285122	A	9	G06F-017/30	

Abstract (Basic): JP 2000285122 A

NOVELTY - A decision circuit determines the inclusion relationship of a character code between a word newly registered to a thesaurus, and a word already registered to the thesaurus. A relationship property registration unit registers relationship data which show the higher order relationship or the lower order conception between a novel registration word and a registered word to the thesaurus.

DETAILED DESCRIPTION - A memory stores the thesaurus which describes the relationship of the registered word and the word to be registered. An input unit inputs a sentence analyzed in morphological analysis. A word extraction unit extracts a word included in the input sentence. A registration decision circuit determines whether the extracted word is a word registered into the thesaurus. A registration unit performs the novel registration of the extracted word to the thesaurus when the extracted word is a word not registered to the thesaurus. INDEPENDENT CLAIMS are also included for the following:

(a) a thesaurus generating method;

(b) and a recording medium used in storing thesaurus generating program.

USE - For thesaurus.

ADVANTAGE - Load of operation in registering data that show the operation and semantic relationship of words is reduced.

DESCRIPTION OF DRAWING(S) - The figure shows the flowchart of the thesaurus generating method by a thesaurus generating program.

pp; 9 DwgNo 3/5

Title Terms: GENERATE; APPARATUS; REGISTER; UNIT; REGISTER; RELATED; DATA; HIGH; ORDER; RELATED; LOWER; ORDER; CONCEPTION; NOVEL; REGISTER; WORD; REGISTER; WORD

Derwent Class: T01

International Patent Class (Main): G06F-017/30

International Patent Class (Additional): G06F-017/28

File Segment: EPI

20/5/29 (Item 16 from file: 350)
DIALOG(R) File 350:Derwent WPIX
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012422728 **Image available**
WPI Acc No: 1999-228836/199919
Related WPI Acc No: 2001-353043

XRPX Acc No: N99-169329

Theme determining method for discourse

Patent Assignee: ORACLE CORP (ORAC-N)

Inventor: WICAL K

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5887120	A	19990323	US 95455484	A	19950531	199919 B

Priority Applications (No Type Date): US 95455484 A 19950531

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5887120	A		21	G06F-015/00	

Abstract (Basic): US 5887120 A

NOVELTY - The themes of the input discourse are **classified** by relating them into **categories** of knowledge catalog reflecting **semantic** or linguistic **relationship** between them. A theme **concept** is generated by extracting a **category** from a higher level in knowledge catalog and is added as a theme if more than one theme map to the theme **concept**.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for a **program** for determining theme of a discourse.

USE - For discourse for business and industry.

ADVANTAGE - Provides unique infrastructure to accurately represent **concepts** that **define** knowledge. Provides multiple views, characterization and **organization** of **concepts**. Flexibility provided by the structure of knowledge catalog permits generation of true knowledge map.

DESCRIPTION OF DRAWING(S) - The figure shows a high level methodology for content processing including theme vector processing.
pp; 21 DwgNo 5/8

Title Terms: THEME; DETERMINE; METHOD

Derwent Class: T01; T02

International Patent Class (Main): **G06F-015/00**

International Patent Class (Additional): G06G-007/00

File Segment: EPI

20/5/30 (Item 17 from file: 350)

DIALOG(R) File 350:Derwent WPIX

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012039810 **Image available**

WPI Acc No: 1998-456720/199839

XRPX Acc No: N98-356470

Problem resolution supporting method in computer network e.g. LAN - involves generating several hierarchically ranked diagnostic methods that identify prospective sources of associated problem in computer system

Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)

Inventor: GORE R C

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5794237	A	19980811	US 95555951	A	19951113	199839 B
			US 97963092	A	19971103	

Priority Applications (No Type Date): US 95555951 A 19951113; US 97963092 A 19971103

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5794237	A		15	G06F-017/30	Cont of application US 95555951

Abstract (Basic): US 5794237 A

The method involves building a problem solution identification **database** containing **information** pertaining to diagnostic methods. A user **defined information** corresponding to problem **associated** with

computer system is received. The **database** is then **searched** by employing **semantic distance search** technique, based on the received **information**. Several hierarchy ranked diagnostic methods which identify **prospective** sources of **associated** problem are generated based on the **search** result.

One of the diagnostic methods **searched** from the **database** is executed. During execution, a relevant feedback **file** having **search** texts is compiled. The compiled feedback **file** is appended to the **database**. The appended feedback **file** is **analysed** in **order** to generate statistical indices corresponding to the executed diagnostic method. The execution result of the diagnostic method is recorded. The alteration in feedback **file** in **database** is **searched** based on the statistical indices.

ADVANTAGE - Simplifies administration in providing computer based problem identification and solution assistance.

Dwg.1/7

Title Terms: PROBLEM; RESOLUTION; SUPPORT; METHOD; COMPUTER; NETWORK; LAN; GENERATE; HIERARCHY; RANK; DIAGNOSE; METHOD; IDENTIFY; **PROSPECTING**; SOURCE; **ASSOCIATE**; PROBLEM; COMPUTER; SYSTEM

Derwent Class: T01

International Patent Class (Main): **G06F-017/30**

File Segment: EPI

20/5/31 (Item 18 from file: 350)

DIALOG(R) File 350:Derwent WPIX

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012039743 **Image available**

WPI Acc No: 1998-456653/199839

XRPX Acc No: N98-356403

Natural language interpretation method using computer - involves determining relation between words in input languages by semantic information expressed in logic form and classifying concepts and relation by ontological classification network

Patent Assignee: INTELLIGENT TEXT PROCESSING INC (INTE-N)

Inventor: DAHLGREN K; STABLER E

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5794050	A	19980811	US 95369034	A	19950104	199839 B
			US 97943069	A	19971002	

Priority Applications (No Type Date): US 95369034 A 19950104; US 97943069 A 19971002

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5794050	A		17	G06F-009/45	Cont of application US 95369034

Abstract (Basic): US 5794050 A

The method involves **parsing** a word by a **parser** (502) **analyzing** it relative to other words in the input natural language. Structural and word sense ambiguity is eliminated in the input language. A partial discourse representation generated for subset of the input language is added and translated into suitable first **order** logic form. An entry in a **dictionary** for a word in the input language is identified.

Multiple common sense meanings and syntactic and **semantic information** associated with the meanings are identified. The **semantic information** expressed in first **order** logic form contains multiple entries in the **dictionary** and is used to determine **relationship** between several input languages. An ontological **classification network classifies concepts** and relationships between several **classifications**.

ADVANTAGE - Eases implementation in any type of computer system or processing environment. Provides interface to world wide web and **information** high way. Improves ability of robot to behave independently on basis of word knowledge. Understands environment from beginning effectively.

Dwg.5/8

Title Terms: NATURAL; LANGUAGE; INTERPRETATION; METHOD; COMPUTER; DETERMINE
; RELATED; WORD; INPUT; LANGUAGE; **INFORMATION** ; EXPRESS; LOGIC; FORM;
CLASSIFY ; **CONCEPT** ; RELATED; **CLASSIFY** ; NETWORK
Derwent Class: T01
International Patent Class (Main): **G06F-009/45**
File Segment: EPI

20/5/32 (Item 19 from file: 350)
DIALOG(R) File 350:Derwent WPIX
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011247743 **Image available**

WPI Acc No: 1997-225646/199720

XRPX Acc No: N97-186734

**Japanese data keyword extraction device for database - includes
keyword candidate unit extracting keywords according to morpheme
dictionary containing morpheme information with keyword finalising
unit determining true keywords with frequencies above threshold**

Patent Assignee: NEC KK (NIDE); NEC CORP (NIDE)

Inventor: EMORI K; OHTSUKI N

Number of Countries: 002 Number of Patents: 002

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5619410	A	19970408	US 94219530	A	19940329	199720 B
KR 9704100	B1	19970325	KR 946321	A	19940329	199937

Priority Applications (No Type Date): JP 9393655 A 19930329

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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US 5619410	A		24	G06F-017/30	
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KR 9704100	B1			G06F-017/27	
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Abstract (Basic): US 5619410 A

The sentence segmentation device includes a morpheme **analysis**
unit dividing sentence-by-sentence **data** into morphemes and **analysing**
them on the basis of **information** regarding morpheme-by-morpheme
continuation contained in an analytical **dictionary**. A morpheme
dictionary information development unit develops the contents of the
morpheme **dictionary** including part of speech, **semantic**
classification, sentence pattern and noted term **information**. A
keyword candidate extraction unit extracts keyword candidates from
sentence-by-sentence **data** on the basis of the part of speech
information and the context of each morpheme.

A case **information** acquisition unit acquires case **information**
from **information** regarding the classes of case of keyword candidates
immediately preceding noted terms stored in a noted term table and case
class **classification information** stored in a case class conversion
table. A frequency **information** acquisition unit acquires the
appearance frequency of each keyword candidate. An importance
calculation unit **calculates** the importance of each keyword candidate
as a keyword. A keyword finalizing unit definitely determines as true
keywords only those keyword candidates having degrees of importance
above a set level of importance.

ADVANTAGE - Provides automatic keyword extraction on basis of
frequency of appearance in **text** and **semantic information**.

Keywords accurately reflect **meaning** of theme of **text**.

Dwg.1/20

Title Terms: JAPAN; **DATA** ; KEYWORD; EXTRACT; DEVICE; **DATABASE** ; KEYWORD;
CANDIDATE; UNIT; EXTRACT; KEYWORD; ACCORD; **DICTIONARY** ; CONTAIN;
INFORMATION ; KEYWORD; UNIT; DETERMINE; TRUE; KEYWORD; FREQUENCY; ABOVE;
THRESHOLD

Derwent Class: T01

International Patent Class (Main): **G06F-017/27** ; **G06F-017/30**

International Patent Class (Additional): **G06F-017/20**

File Segment: EPI

20/5/33 (Item 20 from file: 350)
DIALOG(R) File 350:Derwent WPIX
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010277756 **Image available**

WPI Acc No: 1995-179011/199523

XRPX Acc No: N95-140504

Semantic object modelling system for creating relational database
schemes - enables user to associate attributes describing
characteristic that all instances of semantic object have in common,
with semantic objects corresp to number of relational tables defining
database scheme

Patent Assignee: WALL DATA INC (WALL-N)

Inventor: EGGBROTEN L I; KAWAI K; KROENKE D M; OLDS C C

Number of Countries: 060 Number of Patents: 015

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 9512172	A1	19950504	WO 94US10355	A	19940913	199523	B
AU 9479552	A	19950522	AU 9479552	A	19940913	199534	
NO 9601698	A	19960626	WO 94US10355	A	19940913	199636	
			NO 961698	A	19960426		
EP 727070	A1	19960821	EP 94930429	A	19940913	199638	
			WO 94US10355	A	19940913		
US 5548749	A	19960820	US 93145997	A	19931029	199639	
BR 9407897	A	19961119	BR 947897	A	19940913	199701	
			WO 94US10355	A	19940913		
AU 676395	B	19970306	AU 9479552	A	19940913	199718	
NZ 275544	A	19970526	NZ 275544	A	19940913	199727	
			WO 94US10355	A	19940913		
JP 9507106	W	19970715	WO 94US10355	A	19940913	199738	
			JP 95512611	A	19940913		
CN 1137320	A	19961204	CN 94194493	A	19940913	199805	
US 5809297	A	19980915	US 93145997	A	19931029	199844	
			US 96695000	A	19960809		
EP 727070	B1	19990512	EP 94930429	A	19940913	199923	
			WO 94US10355	A	19940913		
DE 69418474	E	19990617	DE 618474	A	19940913	199930	
			EP 94930429	A	19940913		
			WO 94US10355	A	19940913		
ES 2134959	T3	19991016	EP 94930429	A	19940913	199950	
MX 9602700	A1	19980101	MX 962700	A	19960709	199952	N

Priority Applications (No Type Date): US 93145997 A 19931029; US 96695000 A
19960809; MX 962700 A 19960709

Cited Patents: Jnl.Ref; EP 560543

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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WO 9512172	A1	E	99	G06F-017/30	
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Designated States (National): AM AT AU BB BG BR BY CA CH CN CZ DE DK EE
ES FI GB GE HU JP KE KG KP KR KZ LK LR LT LU LV MD MG MN MW NL NO NZ PL
PT RO RU SD SE SI SK TJ TT UA US UZ VN

Designated States (Regional): AT BE CH DE DK ES FR GB GR IE IT KE LU MC
MW NL OA PT SD SE

AU 9479552	A			G06F-017/30	Based on patent WO 9512172
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EP 727070	A1	E	99	G06F-017/30	Based on patent WO 9512172
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Designated States (Regional): AT BE CH DE DK ES FR GB GR IE IT LI LU MC
NL PT SE

US 5548749	A		65	G06F-015/40	
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BR 9407897	A			G06F-017/30	Based on patent WO 9512172
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AU 676395	B			G06F-017/30	Previous Publ. patent AU 9479552
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Based on patent WO 9512172

NZ 275544	A			G06F-017/30	Based on patent WO 9512172
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JP 9507106	W		131	G06F-017/30	Based on patent WO 9512172
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US 5809297	A			G06F-017/30	Cont of application US 93145997
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Cont of patent US 5548749

EP 727070	B1	E		G06F-017/30	Based on patent WO 9512172
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Designated States (Regional): AT BE CH DE DK ES FR GB GR IE IT LI LT LU
MC NL PT SE SI

DE 69418474	E	G06F-017/30	Based on patent EP 727070
			Based on patent WO 9512172
ES 2134959	T3	G06F-017/30	Based on patent EP 727070
NO 9601698	A	G06F-017/30	
CN 1137320	A	G06F-017/30	
MX 9602700	A1	G06F-009/00	

Abstract (Basic): WO 9512172 A

The system allows a user to create a **semantic object data model** of the **database schema**. The **semantic object data model** is **defined** by one or more **semantic objects**, each of which includes one or more attributes that **describe** a characteristic of the **semantic objects**. The attributes are **defined** as being either simple **value** attributes that **describe** a single characteristic of the **semantic object**, **group** attributes that include one or more member attributes that collectively **describe** a characteristic of the **semantic object**, formula attributes that **define** a computation that **describes** a characteristic of a **semantic object**, or object link attributes that **define** a **relationship** between two or more **semantic objects**.

Once the **semantic object model** is created, the system validates the **semantic objects** to ensure that no modelling errors have been made, and transforms the **semantic objects** and their included attributes into a number of relational **database tables** that will store **data** as **defined** by the **semantic object data model**.

USE/ADVANTAGE - Allows user to easily produce **database schema** and create album that **defines semantic object data model** of number of relational **database tables** that **define database schema**.

Dwg.1/29

Title Terms: OBJECT; MODEL; SYSTEM; RELATED; **DATABASE** ; SCHEME; ENABLE; USER; ASSOCIATE; ATTRIBUTE; **DESCRIBE** ; CHARACTERISTIC; INSTANCE; OBJECT; COMMON; OBJECT; CORRESPOND; NUMBER; RELATED; TABLE; **DEFINE** ; **DATABASE** ; SCHEME

Derwent Class: T01

International Patent Class (Main): G06F-009/00 ; G06F-015/40 ;
G06F-017/30

International Patent Class (Additional): G06F-012/00 ; G06F-019/00

File Segment: EPI

20/5/34 (Item 21 from file: 350)

DIALOG(R) File 350:Derwent WPIX

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009206526 **Image available**

WPI Acc No: 1992-333947/199241

XRPX Acc No: N92-254902

Data **query system for database - comprises** application software which transforms selection condition and circuit which processes logical values taken on by atomic conditions

Patent Assignee: LEFONS E (LEFO-I)

Inventor: LEFONS E

Number of Countries: 006 Number of Patents: 004

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 507744	A2	19921007	EP 92830102	A	19920304	199241 B
IT 1244938	B	19940913	IT 91RM154	A	19910306	199508
EP 507744	A3	19931208	EP 92830102	A	19920304	199514
US 5398199	A	19950314	US 92846806	A	19920304	199516

Priority Applications (No Type Date): IT 91RM154 A 19910306

Cited Patents: No-SR.Pub; 3.Jnl.Ref

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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EP 507744	A2	E	31	G06F-015/403	
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Designated States (Regional): DE FR GB IT NL

US 5398199 A 28 G06F-015/32
IT 1244938 B G06F-000/00
EP 507744 A3 G06F-015/403

Abstract (Basic): EP 507744 A

The apparatus consists of an **application software** and a circuitry for the processing of the **data** selection conditions of the user query embodied in a host **data base** management system or **information** retrieval system. The **application software** translates the selection condition into the standard form which the circuitry can process.

From the host system, and for each **data** record to be **analysed**, the circuit apparatus receives the logical values taken on by the atomic conditions of the query and returns the logical **value** that the global selection condition takes on.

ADVANTAGE - Allows user to query **data**, and on basis of any truth-valued logic set up arbitrary number of logical values within limits fixed by system developer.

at

Dwg.2/20

Title Terms: **DATA**; QUERY; SYSTEM; **DATABASE**; COMPRISE; APPLY; **SOFTWARE**; TRANSFORM; SELECT; CONDITION; CIRCUIT; PROCESS; LOGIC; **VALUE**; ATOMIC; CONDITION

Derwent Class: Q16; T01

International Patent Class (Main): **G06F-015/32**; **G06F-015/403**

International Patent Class (Additional): **G06F-015/40**

File Segment: EPI; EngPI

20/5/35 (Item 22 from file: 350)

DIALOG(R) File 350:Derwent WPIX

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007501131 **Image available**

WPI Acc No: 1988-135064/198820

XRPX Acc No: N88-102814

Language translation appts. using computer - generates target language sentence based on analysed sentence of original language, and performs synthetic analysis

Patent Assignee: SHARP KK (SHAF)

Inventor: FUKUMOCHI Y; HRAI T; KUGIMIYA S; SATA ; SHIOTANI S; SUZUKI H; TOKUNAGA S

Number of Countries: 002 Number of Patents: 002

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
GB 2197510	A	19880518	GB 8725045	A	19871026	198820 B
US 4953088	A	19900828	US 89372133	A	19890626	199037

Priority Applications (No Type Date): JP 86284486 A 19861128; JP 86256077 A 19861027; JP 86256078 A 19861027; JP 86256079 A 19861027

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

GB 2197510 A 14

Abstract (Basic): GB 2197510 A

The translation apparatus has a computer which **analyses** an original language sentence, and generates a target language sentence based on the **analysed** sentence. During the translation, indicators are displayed on a screen for indicating that the **analysis** of the original language sentence is taking **place**. Other indicators are displayed for indicating that the generation of the target language sentence is taking **place**. The indicators help the operator to know that, particularly when it is taking a long time to translate, the translation apparatus is operating properly.

The **analyser** has a **dictionary** look-up and morpheme **analysis** to find a word **information** for each word in the original language sentence. A syntactic **analysis** is carried out to find a **relationship** between the words in the original language sentence and to determine

on or more sentence constructions. A **semantic analysis** is used to select one sentence construction among the sentence constructions determined in the syntactic **analysis** from the viewpoint of the **meaning**.

ADVANTAGE - Indicates translation steps being carried out in computer.

3,4/8

Title Terms: LANGUAGE; TRANSLATION; APPARATUS; COMPUTER; GENERATE; TARGET; LANGUAGE; SENTENCE; BASED; **ANALYSE** ; SENTENCE; ORIGINAL; LANGUAGE; PERFORMANCE; SYNTHETIC; **ANALYSE**

Derwent Class: T01

International Patent Class (Additional): **G06F-015/38**

File Segment: EPI

20/5/36 (Item 23 from file: 350)

DIALOG(R) File 350:Derwent WPIX

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007339108

WPI Acc No: 1987-336114/198748

XRPX Acc No: N87-251689

Japanese to english translation machine - has dictionary unit with semantic information and translation unit which syntactically and semantically translates

Patent Assignee: TOSHIBA KK (TOKE)

Inventor: AOYAMA C; KUMANO A; SUGAWARA Y

Number of Countries: 004 Number of Patents: 005

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 247395	A	19871202	EP 87106512	A	19870506	198748 B
US 4964044	A	19901016	US 89412538	A	19890922	199044
EP 247395	B1	19940216	EP 87106512	A	19870506	199407
DE 3789073	G	19940324	DE 3789073	A	19870506	199413
			EP 87106512	A	19870506	
EP 247395	B2	19981104	EP 87106512	A	19870506	199848

Priority Applications (No Type Date): JP 86113716 A 19860520

Cited Patents: 2.Jnl.Ref; A3...8832; JP 57048161; No-SR.Pub

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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EP 247395	A	E	14		
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Designated States (Regional): DE FR GB

US 4964044	A		13		
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EP 247395	B1	E	15	G06F-015/38	
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Designated States (Regional): DE FR GB

DE 3789073	G			G06F-015/38	Based on patent EP 247395
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EP 247395	B2	E		G06F-017/28	
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Designated States (Regional): DE FR GB

Abstract (Basic): EP 247395 A

The system includes a device for inputting an original sentence in Japanese having no morphological distinction between singular form and plural form. A **dictionary** unit is provided for storing various **information** about the two languages, inclusive of **semantic information** indicative of plurals.

A translation unit is provided for syntactically and semantically translating Japanese into English having morphological distinctions between singular form and plural form. The distinctions are based on syntactic modification **relationship** between a first **category** having a morphological distinction between the two forms and a second **category** including **semantic information** indicative of plural no.

An output device is provided to output English.

Title Terms: JAPAN; ENGLISH; TRANSLATION; MACHINE; **DICTIONARY** ; UNIT; **INFORMATION** ; TRANSLATION; UNIT; TRANSLATION

Derwent Class: T01

International Patent Class (Main): **G06F-015/38** ; **G06F-017/28**

File Segment: EPI

Set	Items	Description
S1	12116403	*deleted* DOCUMENT? OR TEXT OR DATA OR INFORMATION
S2	3512900	CONCEPT? OR IDEA? OR NOTION? OR PERCEPTION? OR THOUGHT?
S3	15781842	ORGANIZ? OR ORGANIS? OR CLASSIF? OR GROUP? OR CATEGOR? OR LAYOUT? OR ORDER? OR ARRANGEMENT? OR CLUSTER? OR MATCH? OR INSERT? OR ENTER OR POST? OR PLACE? OR PLACING
S4	11749373	DATABASE? OR DATA()BASE? OR SOFTWARE OR PROGRAM? OR APPLICATION? OR FILE? OR LEXICON OR DICTIONARY OR GLOSSARY OR VOCABULARY OR WORDBOOK OR TERMINOLOGY OR VOCABULARY
S5	16519646	PARSE? OR PARSING OR FRAGMENT? OR CHUNK? OR SEPARATE? OR BREAKOUT OR BREAK()OUT OR MAPPING OR ANALYZ? OR ANALYS? OR ITEMIZATION OR ENUMERAT? OR ORGANIZ? OR ORGANIS? OR MAPPED OR MAPS
S6	167736	SEMANTIC OR SEMANTICS
S7	8684428	MEANING OR CONCEPT? OR DEFINITION OR DEFINE? OR DEFINING OR DESCRIB? OR STIPULAT? OR DESIGNAT?
S8	16878545	ASSOCIATE? OR LINK??? OR MATCH??? OR RELAT? OR JOIN? OR CONNECT? OR INTEGRAT?
S9	2412379	PROBABILITY OR CHANCE OR LIKELIHOOD OR ODDS OR POSSIBILITY OR PROSPECT?
S10	28465	S9 (3N) (RETRIEV? OR QUER? OR LOOKUP OR LOOK()UP OR SEARCH? OR SEEK? OR QUER? OR MATCH? OR QUEST? OR PURSU? OR FIND???)
S11	3365811	S8 (S) (DISTANCE OR VALUE OR SPACE OR RELATIONSHIP OR CALCULAT? OR DYNAMIC()SCALING()FACTOR?)
S12	3481	(S1 OR S2) (S) S3 (S) S4 (S) S5 (S) S6 (S) S7
S13	3	S11 (S) S9 (S) S10 (S) S11 (S) S12
S14	279	S6 (S) S7 (S) S8 (S) S9 (S) S11
S15	22	S12 (S) S14
S16	22	S13 OR S15
S17	16	S16 NOT PY>1999
S18	15	S17 NOT PD>19990922
S19	13	RD (unique items)
File	2:INSPEC 1969-2004/Jul W4	(c) 2004 Institution of Electrical Engineers
File	6:NTIS 1964-2004/Aug W1	(c) 2004 NTIS, Intl Cpyrght All Rights Res
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File	95:TEME-Technology & Management 1989-2004/Jun W1	(c) 2004 FIZ TECHNIK
File	99:Wilson Appl. Sci & Tech Abs 1983-2004/Jul	(c) 2004 The HW Wilson Co.
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File	239:Mathsci 1940-2004/Sep	(c) 2004 American Mathematical Society
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File	647:CMP Computer Fulltext 1988-2004/Jul W4	

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(c) 2004 IDG Communications
File 696:DIALOG Telecom. Newsletters 1995-2004/Jul 23
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19/5/1 (Item 1 from file: 2)

DIALOG(R) File 2:INSPEC

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6331490 INSPEC Abstract Number: C1999-10-1220-012

Title: Data-driven construction of transparent fuzzy models: methods and applications

Author(s): Babuska, R.; Setnes, M.

Author Affiliation: Fac. of Inf. Technol. & Syst., Delft Univ. of Technol., Netherlands

Conference Title: 6th European Congress on Intelligent Techniques and Soft Computing. EUFIT '98 Part vol.1 p.594-602 vol.1

Publisher: Verlag Mainz, Aachen, Germany

Publication Date: 1998 Country of Publication: Germany 3 vol. xxvi+2010 pp.

ISBN: 3 89653 500 5 Material Identity Number: XX-1999-02098

Conference Title: 6th European Congress on Intelligent Techniques and Soft Computing. EUFIT '98

Conference Date: 7-10 Sept. 1998 Conference Location: Aachen, Germany

Language: English Document Type: Conference Paper (PA)

Treatment: Theoretical (T)

Abstract: The interest in **data** driven approaches to the acquisition of fuzzy systems is increasing. Reasons to choose fuzzy systems instead of other modeling techniques such as neural networks, radial basis functions or splines, are mainly the **possibility** of **integrating** logical **information** processing with the attractive mathematical properties of general function approximators. The rule-based structure of fuzzy systems also makes their qualitative **analysis** possible. However, many of the **data** -driven fuzzy modeling algorithms developed aim at good numerical approximation while little attention is paid to the semantical properties of the resulting rule base. The article discusses a **data** -driven approach to fuzzy modeling that provides the user with both accurate and transparent rule bases. The method has two main steps: **data** exploration by means of fuzzy **clustering** , and fuzzy set aggregation by means of similarity **analysis** . First, fuzzy **relationships** are identified in the product **space** of the system's variables and **described** by means of fuzzy production rules. Then, compatible fuzzy **concepts** **defined** for the individual variables are identified and aggregated to produce generalizing **concepts** , giving a comprehensible rule base with increased **semantic** properties. An **application** example is presented. (28 Refs)

Subfile: C

Descriptors: aggregation; fuzzy set theory; fuzzy systems; identification ; knowledge based systems; modelling; pattern clustering

Identifiers: data-driven construction; transparent fuzzy models; logical information processing; general function approximators; rule-based structure; qualitative analysis; transparent rule bases; data exploration; fuzzy clustering; fuzzy set aggregation; similarity analysis; fuzzy relationships; generalizing concepts; semantic properties

Class Codes: C1220 (Simulation, modelling and identification); C1160 (Combinatorial mathematics); C4210 (Formal logic); C6170 (Expert systems and other AI software and techniques); C1230 (Artificial intelligence); C1250 (Pattern recognition)

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19/5/2 (Item 2 from file: 2)

DIALOG(R) File 2:INSPEC

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4919653 INSPEC Abstract Number: C9505-6160B-025

Title: Rule based joins in heterogeneous databases

Author(s): Chatterjee, A.; Segev, A.

Author Affiliation: Walter A. Haas Sch. of Bus., California Univ., Berkeley, CA, USA

Journal: Decision Support Systems vol.13, no.3-4 p.313-33

Publication Date: March 1995 Country of Publication: Netherlands

CODEN: DSSYDK ISSN: 0167-9236

U.S. Copyright Clearance Center Code: 0167-9236/95/\$09.50

Language: English Document Type: Journal Paper (JP)

Treatment: Theoretical (T)

Abstract: The problem of computing **joins** in heterogeneous **databases** is **analyzed**. Rules are combined with a probabilistic framework to resolve the **data** heterogeneity problem. The entity-join operator is **defined** to identify and **join** records across **databases**. A certain amount of uncertainty is **associated** with this entity-join model due to the **possibility** of wrong **matches**. While the rule-based approach captures the **data semantics**, the probabilistic framework models the uncertainty and provides a formal measure of accuracy of the entity-join. Representing the values of mismatched attributes presents a difficult problem because the true **value** of the attribute cannot be identified from the various conflicting values. Probabilistic partial values are used to represent these attribute values so that user preferences and the reliability of the **data** can be taken into account. (36 Refs)

Subfile: C

Descriptors: data integrity; database theory; distributed databases; probability; software reliability

Identifiers: rule based joins; heterogeneous databases; attribute values; data heterogeneity problem; entity-join operator; uncertainty; wrong matches; data semantics; accuracy; mismatched attributes; conflicting values; probabilistic partial values; user preferences; data reliability; federated database; structural heterogeneity; semantic heterogeneity; approximation; tuple probability

Class Codes: C6160B (Distributed databases); C4250 (Database theory)

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19/5/3 (Item 1 from file: 239)

DIALOG(R) File 239:Mathsci

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02347995 MR 84b#03004

Fuzzy set and possibility theory.

Recent developments. Papers presented at the Symposium held in Acapulco, December 1980. Edited by Ronald R. Yager.

Contributors: Yager, Ronald R.

Publ: Pergamon Press, Inc., Elmsford, N.Y.,

1982, xiv+633 pp. ISBN: 0-08-026294-5

Price: \$70.00.

Language: English

Document Type: Book; Proceedings

Journal Announcement: 1514

Fuzzy set and possibility theory; Symposium: Fuzzy Set and Possibility Theory; Acapulco, 1980

Subfile: MR (Mathematical Reviews) AMS

Abstract Length: LONG (81 lines)

Contents: D. Dubois [Didier Dubois] and H. Prade [Henri Prade], A unifying view of comparison indices in a fuzzy set-theoretic framework (pp. 3 - 13); Marian B. Gorzalczany, Jerzy B. Kiszka and Marian S. Stachowicz, Some problems of studying adequacy of fuzzy models (pp. 14 - 31); Yee Leung, Maximum entropy estimation with inexact **information** (pp. 32 - 37); Kokichi Tanaka, Resume on dealing with uncertainty/ambiguity in conjunction with knowledge engineering (pp. 38 - 48); A. M. Norwich and I. B. Turksen, The fundamental measurement of fuzziness (pp. 49 - 60); A. M. Norwich and I. B. Turksen, The construction of membership functions (pp. 61 - 67); A. M. Norwich and I. B. Turksen, Meaningfulness in fuzzy set theory (pp. 68 - 74); Gregg C. Odén and Lola L. Lopes, On the internal structure of fuzzy subjective **categories** (pp. 75 - 89); Ronald R. Yager, Level sets for membership evaluation of fuzzy subsets (pp. 90 - 97); Aleksander A. Kania and Marian S. Stachowicz, Robustness of fuzzy **relation** operator (pp. 98 - 106); V. B. Kuz'min, A reference approach to obtaining fuzzy preference **relations** and problem of choice (pp. 107 - 118); S. V. Ovchinnikov and T. Riera, On fuzzy **classifications** (pp. 119 - 132); Enrique H. Ruspini, Recent developments in fuzzy **clustering** (pp. 133 - 147); J. Watada, H. Tanaka [Hideo Tanaka] and K. Asai [Kiyoji

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Asai], A heuristic method of hierarchical **clustering** for fuzzy intransitive **relations** (pp. 148 - 166); J. F. Baldwin, An automated fuzzy reasoning algorithm (pp. 169 - 195); C. J. Ernst, An approach to management expert systems using fuzzy logic (pp. 196 - 203); Ellen Hisdal, A fuzzy IF THEN ELSE **relation** with guaranteed correct inference (pp. 204 - 210); Masaharu Mizumoto, Fuzzy reasoning with a fuzzy conditional proposition 'if ... then ... else ... ' (pp. 211 - 223); M. Mukaidono, Fuzzy inference of resolution style (pp. 224 - 231); Henri Prade, Modal **semantics** and fuzzy set theory (pp. 232 - 246); Philippe Smets, Elementary **semantic** operators (pp. 247 - 256); H. Tanaka, T. Tsukiyama and K. Asai, A fuzzy system model based on the logical structure (pp. 257 - 274); E. Trillas [Enrique Trillas Ruiz], C. Alsina and L. Valverde, Do we need max, min and 1 - j in fuzzy set theory? (pp. 275 - 297); N. Blanchard, Fuzzy-lip functions - the fuzzy-lip **category** (pp. 301 - 315); D. Dubois [Didier Dubois] and H. Prade, Towards the **analysis** and the synthesis of fuzzy mappings (pp. 316 - 326); Irwin R. Goodman, Fuzzy sets as equivalence classes of random sets (pp. 327 - 343); Ulrich Hohle, A mathematical theory of uncertainty (pp. 344 - 355); Aleksander A. Kania, Fuzzy transformation in terms of possibilistic measure (pp. 356 - 372); Aleksander A. Kania, Possibilistic measure, fuzzy trust and some properties of fuzzy transformations (pp. 373 - 388); E. P. Klement, On the **relationship** between different **notions** of fuzzy measures (pp. 389 - 394); Hung T. Nguyen, On the possibilistic approach to the **analysis** of evidence (pp. 395 - 401); S. E. Rodabaugh, The L-fuzzy real line and its subspaces (pp. 402 - 418); Y. Tsukamoto [Yahachiro Tsukamoto], M. M. Gupta [Madan M. Gupta] and P. N. Nikiforuk, On density of lambda-fuzzy measure (pp. 419 - 425); William H. Benson, An **application** of fuzzy set theory to **data** display (pp. 429 - 438); Yuji Enta, Fuzzy decision theory (pp. 439 - 449); Augustine O. Esogbue and Zikehi M. Ahipo, Fuzzy sets and water resources planning (pp. 450 - 465); Mohammad B. E. Fatmi and Paul P. Wang, Fuzzy detector and fuzzy estimator in communication (pp. 466 - 493); Joseph Fiksel, **Applications** of fuzzy set and **possibility** theory to systems management (pp. 494 - 503); K. S. Fu [King Sun Fu], M. Ishizuka and J. T. P. Yao, **Application** of fuzzy sets in earthquake engineering (pp. 504 - 523); J. Gouvernet, S. Ayme and E. Sanchez, Approximate reasoning in medical genetics (pp. 524 - 530); Janusz Kacprzyk and Andrzej Straszak, Determination of 'stable' regional development trajectories via fuzzy decision-making model (pp. 531 - 541); Manfred Kochen, The origin of **concepts** in nervous systems: can fuzzy set theory clarify the questions? (pp. 542 - 550); Yee Leung, Market area separation in a fuzzy environment (pp. 551 - 561); Dan B. Rinks, A heuristic approach to aggregate production scheduling using linguistic variables: methodology and **application** (pp. 562 - 581); E. Sanchez, J. Gouvernet, R. Bartolin and L. Vovan, Linguistic approach in fuzzy logic of the W.H.O. **classification** of dyslipoproteinemias (pp. 582 - 588); Paul P. Wang and Masaki Togai, Fuzzy sensitivity **analysis** and synthesis technique (pp. 589 - 601); D. Willaey, Optimal control of fuzzy systems (pp. 602 - 613); Ronald R. Yager, A useful bibliography for fuzzy sets (pp. 615 - 633). (The articles will not be reviewed individually.)

Reviewer: Editors

Review Type: Table of contents

Descriptors: *03-06 -Mathematical logic and foundations-Proceedings, conferences, collections, etc. ; 03B52 -Mathematical logic and foundations-General logic-Fuzzy logic (See also 94D05); 03E72 -Mathematical logic and foundations-Set theory (See also 04-XX)-Fuzzy sets (See mainly 04A72)

19/5/4 (Item 2 from file: 239)

DIALOG(R) File 239:Mathsci

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02347899 MR 84b#00009

Applied systems and cybernetics. Vol. I, II, III, IV, V, VI.

Proceedings of the International Congress on Applied Systems Research and Cybernetics held in Acapulco, December 12--16, 1980. Edited by George E. Lasker.

Table of Contents

Contributors: Lasker, George E.
Publ: Pergamon Press, Inc., Elmsford, N.Y.,
1981, xxxiii+3294 pp. ISBN: 0-08-027196-0
Price: \$400.00 the six volume set.
Language: English
Document Type: Book; Proceedings
Journal Announcement: 1513

Applied systems and cybernetics,; Congress: Applied Systems Research and Cybernetics,; Acapulco, Vols. 1--6 International 1980

Subfile: MR (Mathematical Reviews) AMS

Abstract Length: LONG (331 lines)

Contents: Vol. I -- The quality of life: systems approaches:

I. Inaugural addresses (3 papers including the following): Emilio Rosenblueth, Systems, cybernetics, and subjectivity (pp. 1 - 4). II. Quality of life: **concepts** & views (4 papers). III. Quality of life: dimensions and indicators (5 papers). IV. Improving quality of life: methodological **concepts** (4 papers). V. The human system and the quality of life (5 papers including the following): Bela H. Banathy, The quality of life and emerging directions of change in our **conception** of human systems (pp. 114 - 118). VI. Quality of life and the individual person (7 papers including the following): William Gray, Aristide H. Esser and Lucille R. Gray, The human knowledge process as a system forming general system (pp. 136 - 143). VII. Social systems and the quality of life (6 papers). VIII. Social values, ethics and lifestyles in quality of life (5 papers including the following): Charles R. Dechert, Functionality, values **ordering** and decision in social systems (pp. 218 - 227). IX. Quality of life: cross-national and cross-cultural **analysis** (8 papers). X. Law and the quality of life (4 papers). XI. Quality of life education (8 papers). XII. Quality of life in political perspective (4 papers). XIII. Quality of working life (7 papers). XIV. Human kinetics, sports and the quality of life (7 papers). XV. Quality of life and the future (5 papers). XVI. Quality in living spaces (3 papers). XVII. Energy problems and quality of life (1 paper). XVIII. Peace and quality of life through cultural development (6 papers). Vol. II -- Systems **concepts**, models and methodology: I. Current thinking in system science and cybernetics (5 papers including the following): Stuart A. Umpleby, Some implications of cybernetics for theories of social systems (pp. 575 - 578); Alfred Kuhn, Let's bring the skeleton out of the closet (pp. 579 - 591); Giuseppe Cipollina Mangiameli, Cybernetique et revision philosophique [Cybernetics and philosophical revision] (pp. 597 - 601). II. Systems **concepts** (10 papers including the following): Alex M. Andrew, The **concept** of a **concept** (pp. 607 - 612); Manfred Kochen, Appropriate approximation in **concept** genesis (pp. 613 - 618); Bernd Schmeikal, Self-reference sociogony (pp. 642 - 646). III. Systems models and theories (7 papers including the following): B. H. Voorhees, Mathematical theory of hierarchical systems (pp. 662 - 666); Maria Nowakowska, Observability and change (pp. 692 - 696); Robert Vallee, Memorization in systems theory and the **perception** of time (pp. 697 - 700). IV. Epistemology in systems science and cybernetics (3 papers). V. Behavior modeling (5 papers including the following): Charles A. Fink, Now we can return to basic measures in human behavior modeling (pp. 720 - 727); W. H. Tack, Domination in experiments on cooperative games without side payments (pp. 728 - 732); S. Lakshmivarahan and K. S. Narendra, A learning approach to the two-person zero-sum sequential games with incomplete and imperfect **information** (pp. 741 - 745); Fernando Menezes Campello de Souza, On the structure of probabilistic models for binary choice behavior (pp. 746 - 759). VI. Learning systems (7 papers including the following): Gordon Pask, In contrast to Scandura: an essay upon **concepts**, individuals and interactionism (pp. 760 - 769); C. B. Balogh and M. E. Balogh, Natural deduction in a learning system (pp. 780 - 784). VII. Decision systems and **analysis** (10 papers including the following): N. Callaos, W. Lesso and B. Callaos, Mathematical solution to the voter paradox (pp. 841 - 847). VIII. **Information** systems (7 papers). IX. Systems research methodology (18 papers including the following): George J. Klir, Systems methodology: from youthful to useful (pp. 931 - 938); Roger E. Cavallo and George J. Klir, Systems of overall possibilities:

reconstruction aspects (pp. 939 - 946); Roger C. Conant, Combinatorial constraints on structure **analysis** (pp. 947 - 952); F. M. Sim, Y. Takei and L. D. Spence, Explicating loose coupling (pp. 958 - 963); R. Gerardy, On the complexity of paradigms (pp. 964 - 969); Robert W. House, On methods to improve the efficiency of structural modeling (pp. 970 - 975); Lise Lafreniere, Arithmetical models for systems with inbuilt freedom (pp. 976 - 980); P. A. S. Veloso and M. A. Lopes, A framework for problem solving: theory and methodology (pp. 989 - 993); Agostino Villa, Problems of feedback control of uncertain systems: learning and control action (pp. 1002 - 1007); Th. Moulin, L. Nottale, Cl. Vallet and H. Le Guyader, Modelization of natural systems by arithmetical **relators**: new results (pp. 1027 - 1031); James W. Haefner and John M. Pye, Model to test Simon's conjecture: hierarchical versus nonhierarchical systems (pp. 1032 - 1041); C. Bogdanski, **Analysis** of properties in natural (abiotic and biotic) systems; dimension basis of their differentiation in principal types and the standardised method of modeling them (pp. 1042 - 1046).

X. Systems reliability and maintenance **analysis** (8 papers including the following): J. G. Shanthikumar, **Matching** detection and correction routines in reliability improvement (pp. 1078 - 1082). Vol. III -- Human systems, sociocybernetics, management and **organizations**: I. Human systems and institutions (10 papers including the following): L. R. Amey and G. A. Whitmore, Performance measures for sociotechnical systems (pp. 1102 - 1108); C. D. Peterson, Human purposing and a cybernetic society (pp. 1109 - 1113). II. Management and **organization** in human systems (14 papers). III. Sociocybernetics (5 papers including the following): John A. Busch and Gladys M. Busch, Cybernetics IV: a system-type applicable to human **groups** (pp. 1238 - 1243); Harry Perlstadt, On the incorporation of the nonrational into socio-cybernetics and complex systems (pp. 1256 - 1262); Henri Atlan and Jean Pierre Dupuy, Mimesis and social morphogenesis: violence and the sacred from a systems **analysis** viewpoint (pp. 1263 - 1268). IV. Psychocybernetics and systems research in behavioral science (8 papers including the following): A. J. Fielding, An open system model of personality (pp. 1269 - 1273); A. Powell, J. R. Royce, B. Voorhees and J. Tyler, Personality as a complex hierarchical **information** processing system (pp. 1274 - 1279). V. Social interaction and human development (7 papers including the following): Gordon Pask, Developments in conversation theory; actual and potential **applications** (pp. 1326 - 1338); Stein Braten, Time and dualities in self-reflective dialogical systems (pp. 1339 - 1348).

VI. Human service-delivery systems (11 papers). VII. School systems and education (4 papers). VIII. Human values and beliefs in systems perspective (5 papers). IX. Cultural **perceptions** (5 papers). X. Social development and urbanization: a systems perspective (6 papers including the following): Geoffrey Bannister, Revenue determination for dynamic industrial location models (pp. 1566 - 1577). XI. Behavioral and systems approach to historical **analysis** (2 papers). XII. Human systems: future perspectives (7 papers). Vol. IV -- Systems research in health care, biocybernetics and ecology: I. Health care **concepts** (5 papers). II. Health care systems and models (5 papers including the following): Norman P. Archer and George W. Torrance, A maintenance policy model for artificial heart pacemakers (pp. 1700 - 1704). III. Systems and cybernetic models of nursing (7 papers including the following): June C. Abbey, Update of general systems theory: a framework for nursing (pp. 1715 - 1718). IV. Health care systems **analysis** (4 papers). V. Systems research in medical diagnostics and therapy (6 papers including the following): J. Gouvernet, S. Ayme and E. Sanchez, Approximate reasoning in medical genetics (pp. 1766 - 1771); M. Moeschberger, M. Farhanghi, C. Gehrke and K. Kuo, **Application** of statistical methods to diagnostic screening of patients (pp. 1772 - 1775); K. O'Mara, K. V. Leung, T. Fancott and S. Klasa, An algorithm for the nonlinear least-squares **analysis** of the single breath nitrogen washout curve (pp. 1781 - 1788). VI. Stress and the behavioral aspects of health (4 papers). VII. Computer-aided **analysis** and modeling of biosystems (3 papers including the following): W. Duchting and G. Dehl, Recent advances in modeling and simulation of spatial tumor growth (pp. 1824 - 1828); T. Kasvand and C. M. Merritt, Computer assisted human and plant chromosome karyotyping (pp. 1829 - 1843); E. Bernard-Weil and Y.

Cherruault, **Separate** or combined agonistic-antagonistic models. A new approach to the optimal control. Medical implications (pp. 1844 - 1849).

VIII. Systems research in biocybernetics (12 papers including the following): Carol A. Niznik, A probabilistic model for neural path delay prediction (pp. 1850 - 1855); Jorge Monroy B., Low level neural networks emulator (pp. 1856 - 1858); R. Moreno-Diaz and F. Rubio Royo, Towards a theory of visual processing in vertebrate retina (pp. 1859 - 1864); Jonathan V. Post, Enzyme system cybernetics (pp. 1883 - 1888); A. Cheruy, Models for the control of a fermentation process (pp. 1889 - 1894); J. Alvarez and J. M. Ricano, Identification and control of a continuous culture SCP fermentation process (pp. 1895 - 1899); Jaime Alvarez Gallegos and Joaquin Alvarez Gallegos, **Application** of nonlinear control theory to a fermentation process (pp. 1900 - 1905); Roger V. Jean, A new approach to a problem of plant growth (pp. 1906 - 1910).

IX. Ecological systems: modeling and simulation (10 papers including the following): W. G. Cale, Jr. and H. H. Shugart, Ecological reality and model validation (pp. 1911 - 1918); Miguel F. Acevedo L., Modeling ecosystems subject to periodic and sudden disturbances (pp. 1927 - 1931); A. Cheruy and E. Gleason-Garcia, Model of a biological waste water treatment plant (pp. 1957 - 1962); S. Gentil, **Applications** of systems theory to ecological modelling (pp. 1963 - 1967); William C. Hoffman, Environmental psychology, ecological psychology, and the geometry of systems (pp. 1968 - 1972); P. L. Antonelli, Huxley's allometric **space** for an ideal coral reef or forest (pp. 1973 - 1978).

X. Systems approach to environmental quality (5 papers including the following): R. V. Varadarajan, On the role of optimization in environmental systems **analysis** -- a case study (pp. 1979 - 1988); J. T. Finn, Comparison of flow **analysis** in ecosystems and human societies (pp. 1989 - 1996).

XI. Management of ecological systems (4 papers including the following): C. F. Cooper and T. H. Moss, Uncertainty and decision-making in ecosystem management (pp. 2013 - 2017); J. E. Powers and E. Tse [Edison Tse], Choosing an adaptive yield policy (pp. 2032 - 2036).

XII. Environmental impact assessment (4 papers including the following): Thomas G. Hallam, Effects of competition and predation on diversity of communities (pp. 2054 - 2058).

Vol. V -- Systems approaches in computer science and mathematics: I. National **information** resources and systems (5 papers). II. **Database** systems (10 papers including the following): S. K. Arora, S. R. Dumpala and K. C. Smith [Kenneth C. Smith], On the **semantics** of **data** dependencies in **relational data bases** (pp. 2144 - 2150). III. Computers, microcomputers and microprocessors (6 papers). IV. Computer **software** technology (4 papers). V. Distribution systems and processes (3 papers). VI. Natural and computer languages (6 papers including the following): Guy Jumarie, On the problem of the mathematical theorization of human systems dynamics (pp. 2272 - 2276); Douglas R. Skuce, Bridging the gap between natural and computer language (pp. 2277 - 2283); K. S. O'Mara, W. M. Jaworski and S. Klasa, On the development of a recursive model of word structure in the English language (pp. 2284 - 2290).

VII. Man-machine interaction and communication (7 papers including the following): Ingbert Kupka, Pragmatics of **information** and man-machine cooperation (pp. 2303 - 2309).

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XII. Simulation methodology (5 papers including the following): Jacob E. Samaan and Derrick S. Tracy, On the estimation of a discrete parameter in the M/M/m/n queueing system (pp. 2450 - 2456).

XIII. Human factors (7 papers). XIV. CAI and education (4 papers). XV. Computers and the humanities (10 papers including the following): Ladislav Matejka, Trends in Soviet cybernetics (pp. 2587 - 2591).

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XVII. Modeling and control of large scale systems (12 papers including the

following): Mark J. Balas, Stability of distributed parameter systems with finite-dimensional compensators via singular perturbation methods (pp. 2627 - 2633); Helen A. Ryaciotaki-Boussalis and Steven D. Martinez, Stability **analysis** of ecological systems (pp. 2639 - 2643); Eusebius Doedel, On the numerical **analysis** of dynamical systems (pp. 2662 - 2666). Karl H. Agar and Wiley E. Thompson, Real-time solution of stiff linear differential systems (pp. 2667 - 2671). XVIII. Stochastic systems and processes (5 papers including the following): Dhemitrios Boussalis, Asymptotic stability of a class of stochastic interconnected systems (pp. 2678 - 2682); Dhemitrios Boussalis and Wiley E. Thompson, Stochastic stability of a class of decentralized systems (pp. 2683 - 2687); G. Louchard and G. Latouche, Nearly-completely decomposable stochastic processes (pp. 2701 - 2704). XIX. Special mathematical structures (3 papers including the following): J.-P. Auray, G. Duru, A. Dussauchoy and M. Mougeot, **Classifications** endowed by transfer of structures (pp. 2705 - 2709); David W. Brisson, The **application** of the **concept** of complex **space** /time to a model of electric charge (pp. 2713 - 2717). Vol. VI -- Fuzzy sets and fuzzy systems, **possibility** theory and special topics in systems research: I. New **concepts**: Milan Zeleny, Fuzzy sets: precision and relevancy (pp. 2718 - 2721); Maria Nowakowska, Some problems in the foundations of fuzzy set theory (pp. 2722 - 2727); Ulrich Hohle, A mathematical theory of uncertainty (fuzzy experiments and their realizations) (pp. 2728 - 2733); F. Azorin [Francisco Azorin Poch], Uncertainty and fuzziness in primary **data** and estimation procedures (pp. 2734 - 2739); Didier Dubois and Henri Prade, A unifying view of comparison indices in a fuzzy set- theoretic framework (pp. 2740 - 2741); Maria Nowakowska, A new theory of time: generation of time from fuzzy temporal **relations** (pp. 2742 - 2747); S. T. Wierzchon, Ill- **defined** problems -- how to cope with them (pp. 2748 - 2752); J. G. Dijkman, H. van Haeringen and S. J. de Lange, Fuzzy numbers (pp. 2753 - 2756). II. Fuzzy sets theory: recent developments: Irwin R. Goodman, Fuzzy sets as random level sets: implications and extensions of the basic results (pp. 2757 - 2766); Bernadette Bouchon, **Information** transmitted by a system of fuzzy events (pp. 2767 - 2772); James C. Bezdek and Ken Solomon, Simulation of implicit numerical characteristics using small samples (pp. 2773 - 2784); Enrique H. Ruspini, Recent developments in mathematical **classification** using fuzzy sets (pp. 2785 - 2790); N. Blanchard, Fuzzy-lip functions -- the fuzzy- lip **category** (pp. 2791 - 2796); Odile Botta and Marianne Delorme, Some reasons for strengthening of {arr} in the membership grades lattice (pp. 2797 - 2802); S. E. Rodabaugh, Fuzzy arithmetic and fuzzy topology (pp. 2803 - 2807); E. Trillas [Enrique Trillas Ruiz], C. Alsina and L. Valverde, Do we need max, min and 1 - j in fuzzy sets theory? (pp. 2808 - 2813); A. Baciuc and A. Pascu, The interface between hierarchies, multiple objectives, **clustering** and fuzzy sets (pp. 2814 - 2818); Didier Dubois and Henri Prade, Towards the **analysis** and the synthesis of fuzzy mappings (pp. 2819 - 2822). III. Fuzzy **data**: statistical **analysis** (2 papers). IV. Fuzzy measures: E. P. Klement, On the **relationship** between different **notions** of fuzzy measures (pp. 2837 - 2842); Y. Tsukamoto [Yahachiro Tsukamoto], M. M. Gupta [Madan M. Gupta] and P. N. Nikiforuk, On density function of lambda-fuzzy measure (pp. 2843 - 2850); A. M. Norwich and I. B. Turksen, Measurement and scaling of membership functions (pp. 2851 - 2858). V. Knowledge engineering and fuzzy logic (6 papers including the following): J. F. Baldwin, Fuzzy logic knowledge bases and automated fuzzy reasoning (pp. 2859 - 2865); Kokichi Tanaka, Resume on dealing with uncertainty/ambiguity in conjunction with knowledge engineering (pp. 2866 - 2876); E. Sanchez, J. Gouvernet, R. Bartolin and L. Vovan, Linguistic approach in fuzzy logic of the WHO **classification** of dyslipoproteinemias (pp. 2884 - 2889). VI. Fuzzy **relations**: Ellen Hisdal, A fuzzy if then else **relation** with guaranteed correct inference (pp. 2906 - 2911); Umberto Cerruti, **Categories** of L-fuzzy **relations** on L-fuzzy sets (pp. 2912 - 2920); J. Watada, H. Tanaka, Hideo Tanaka and K. Asai [Kiyoji Asai], The heuristic method for finding a fuzzy transitive **relation** (pp. 2921 - 2926); Masaharu Mizumoto, Fuzzy reasonings with 'if ... then ... else ...' (pp. 2927 - 2932). VII. Fuzzy systems (3 papers including the following): Abraham Kandel, On the modeling of uncertain systems (pp. 2939 - 2944); D. Willaeyts, Optimal control of fuzzy systems

(pp. 2945 - 2952). VIII. **Possibility** theory and its **applications** (4 papers including the following): Henri Prade, Modal **semantics** and fuzzy set theory (pp. 2953 - 2958); Hung T. Nguyen, On the possibilistic approach to the **analysis** of evidence (pp. 2959 - 2965). IX. Decision making (4 papers including the following): A. N. S. Freeling; Fuzzy probabilities and the **value** of coherence (pp. 2991 - 2996). X. Repertory grid **analysis** : fuzzy set approach (3 papers). XI. Fuzzy sets **applications** (7 papers including the following): R. Bosserman and R. Ragade, Ecosystem **analysis** using fuzzy set theory (pp. 3033 - 3045); Cl. Vallet, H. Le Guyader and Th. Moulin, Ambiguity and imprecision in arithmetical models of natural systems (pp. 3070 - 3075). XII. Descriptive models of political systems and processes (5 papers including the following): E. W. Kelley, Descriptive models: state of the art (pp. 3082 - 3086); Thomas W. Casstevens, Flows in politics and government (pp. 3092 - 3096). XIII. **Analysis** of socioeconomic development: systems approach (6 papers). XIV. Economic systems modeling (8 papers). XV. Systems modeling and **analysis** of agricultural development (3 papers). XVI. Systems modeling for land use and resources planning (5 papers including the following): Sam Sengupta and James G. Linders, Use of Bayesian models for land-use planning (pp. 3233 - 3245). XVII. Modeling of life support systems (4 papers). XVIII. Global socioeconomic problems (3 papers). (The papers will not be reviewed individually.)

Reviewer: Editors

Review Type: Table of contents

Descriptors: *00A10 -General-General and miscellaneous specific topics- Collections of papers (miscellaneous content)

19/5/5 (Item 3 from file: 239)

DIALOG(R) File 239:Mathsci

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01760240 MR 84k#03069c

Correction: ``Probabilistic semantics objectified. II. Implication in probabilistic model sets''.

van Fraassen, Bas C.

J. Philos. Logic

Journal of Philosophical Logic, 1982, 11, no. 4, 465. ISSN:

0022-3611 CODEN: JPLGA7

Language: English

Document Type: Journal

Journal Announcement: 1513

Subfile: MR (Mathematical Reviews) AMS

Abstract Length: LONG (39 lines)

From the introduction of part I: ``Probabilistic **semantics** is the study of languages in which the admissible valuations are identified as **probability** functions. There is now a sizable body of work on this subject in which binary (conditional) **probability** functions are **defined** directly on the syntax; we refer to this as 'pre-objective'. In what we call 'objective' probabilistic **semantics**, the syntax is interpreted in a model or frame on which the probabilities are **defined**. Part I studies pre-objective **semantics**, with the dual aim of giving reasons to doubt its sufficiency and of displaying its essential structure as a preliminary step toward 'objectification'. Section 1 contains brief remarks on the philosophical problems that motivate the study. The remainder of part I proposes new probabilistic **analyses** of some familiar logics, ending with the conclusion that there is no reasonable pre-objective treatment of quantification. Part II discusses arguments with infinite sets of premises and gives some **idea** of what the models must be like, and part III will propose a model theory along those lines.''

From the introduction to part II: ``What is implication in probabilistic **semantics**? Part I illustrates the general **program** of (pre-objective) probabilistic **semantics** by **analyses** of classical and intuitionistic propositional logic and classical quantifier logic. This involves a **definition** of validity for single-premise arguments, but only a necessary condition for implication by (finitely or infinitely)

many premises. In part II we examine the implication **relationship** in complete generality. The results force us to shift the focus of the **semantics** from single **probability** functions to natural classes of such functions, called probabilistic model sets. Only in such sets is implication well behaved in the infinitary case; they are sets closed under the **relationship** of subordination introduced in the last section of part I. In these sets we can identify algebras of propositions (sets of **probability** functions, in analogy to sets of possible worlds) and find the first real inkling of what objective probabilistic **semantics** ('conceivable mind model theory') must be like.' (The erratum corrects the claim that the sixth **postulate** QVI follows from the first five.)

Reviewer: Editors

Review Type: Abstract

Descriptors: *03B48 -Mathematical logic and foundations-General logic-Probability and inductive logic (See also 60A05)

19/5/6 (Item 4 from file: 239)

DIALOG(R) File 239:Mathsci

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01684523 MR 82k#03094

Constructive functional analysis.

Bridges, Douglas S.

Publ: Pitman (Advanced Publishing Program), Boston, Mass.-London,

1979, v+203 pp. ISBN: 0-273-08418-6

Series: Research Notes in Mathematics, 28.

Price: \$15.00.

Language: English

Document Type: Book

Journal Announcement: 1113

Subfile: MR (Mathematical Reviews) AMS

Abstract Length: LONG (159 lines)

This is a wonderful book, in the style of E. A. Bishop [Foundations of constructive **analysis**, McGraw-Hill, New York, 1967; MR 36 #4930]; it is aimed at mathematicians, and hence contains a minimum of logic, philosophy and special notations. The mathematics used is like recursive mathematics (r.m.), but with two differences: (1) considering all recursive functions computable, the author (like Bishop) does not restrict himself to them, arguing that maybe physical experiments will lead to a nonrecursive function, but he also leaves the **possibility** that Church's thesis is true. That is why all positive results of the book are applicable to r.m., but, unlike in r.m., the author is very much restricted in proving negative results: the only way is that of reduction to a belief (not proof) that no regular method for proving Fermat's theorem, the Riemann hypothesis, etc., exists. To our mind, this difficulty can be easily overcome: of course, physical experiments can lead to nonrecursive sequences (e.g., random in the sense of Martin-Lof), but all sequences, obtained from their **analysis**, are recursive in some fixed alpha (e.g., the sequence of results of all experiments), and one can easily check that all (even the most complicated) results of r.m. (positive and negative) remain valid if one changes 'recursive' to 'recursive in alpha' in all definitions. That is why all negative results of r.m. can be used. (2) Problems in which there is quantification over arbitrary sets (e.g., about **connectivity**) are unclear, because there is neither a **semantics** nor a formal system for them. Main results: Chapter 1: **Notions** of logic, computability, sets, reals. **Semantics** is realizability (like Kleene's), but: (a) with 'e is a proof of p' instead of 'e realizes p' and (b) without fixing any concrete class of computations. What are usually called sets are here called 'classes'; 'sets' are classes with an equivalence **relation** ('sets with equality' in r.m. **terminology**); functions are computations consistent with =. Chapter 2: Metric spaces, located sets. Classical summability criteria (Kummer's, d'Alembert's, Gauss - Raabe) turn out to be constructive. Three analogues of classical **connectivity** are given, all using quantifiers {all} A over sets, their mutual

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dependence investigated (but not **connections** with definitions not using {all} A, e.g., metric **connectivity** {all} a, b {all} $\epsilon > 0$ {exists} $x_0=a, x_1, \dots, x_n=b$ ($\rho(x_i, x_{i+1}) < \epsilon$) that is (classically) equivalent for compacts). Criteria of compactness are proved (compact {arlr} located and closed for $A\{lhk\}R\{sup\}n$ and the Ascoli theorem). Unlike in Bishop's book (op. cit.), $f: E\{arrr\}E'$ is said to be continuous if {all} $\epsilon > 0$ {exists} $\delta > 0$ {all} $x \in g(K)$ {exists} $y \in E$ ($\rho(x, y) \leq \delta$ {arrr} $\rho(fx, fy) \leq \epsilon$) for any compact K and uniformly continuous $g: K\{arrr\}E$. Sections 8 - 10: Locally compact spaces (this term is confusing; it means here (as in Bishop's book) that any ball is contained in a compact -- classically it is 'finitely compact'). Chapter 3: Normed spaces and linear functionals. A linear functional u is normable ($\{dvert\}u\{dvert\}$ is computable) if and only if $u \cdot \{sup\}(-1)(0)$ is located. A weak analogue of a separation theorem is proved: If $C, C'\{lhk\}E$ are bounded, convex, E separable, Minkowski sum $C - C'$ located, $\rho(0, C - C') > 0$ then there exists a separating u . ϵ -Hahn-Banach theorem: For any $\epsilon > 0$ and for any normable $u: F\{arrr\}R, F\{lhk\}E$, there exists a normable $u\{sup^*\}: E\{arrr\}R, u\{sup^*\}\{dvert\}\{sub\}F=u, \{dvert\}u\{sup^*\}\{dvert\} \leq \{dvert\}u\{dvert\} + \epsilon$. The weak topology is defined; the closed ball in the weak dual is compact. Chapter 4: The algebra $C(X)$. Characters on $C(X)$ are $f(x)$ for some $x \in X$. The Stone-Weierstrass theorem is proved. Chapter 5: **Integration** on locally compact spaces (in the style of Bishop); Egorov's and Lebesgue's monotone and dominated convergence theorems are proved. Chapter 6: Hilbert **space**. A linear subspace is located if and only if there is a projection on it. The strong operator topology is used for defining $f(A)$ for selfadjoint A . The existence of common ϵ -eigenvectors ($\{dvert\}Ax - \lambda x\{dvert\} < \epsilon$) for commuting operators and of ϵ -spectral representations ($\{dvert\}A - \{\sum\} c\{sub\}kP\{sub\}k \{dvert\} < \epsilon$, all projections $P\{sub\}i$ commute) is proved; the Gel'fand representation of a $C\{sup^*\}$ -algebra turns out to be constructive. The epilogue is devoted to best approximation (existence of $b \in E$ such that $\rho(a, b) = \rho(a, E)$). Appendix: Calculus, with Cauchy's theorem for differential equations. Many interesting results are included as problems. (Reviewer's remarks: (I) The author is almost unaware of Soviet works: We mention only the book by B. A. Kushner [Lectures on constructive mathematical **analysis** (Russian), Nauka, Moscow, 1973; MR 52 #53], with a large bibliography, and the monograph by Phan Dinh Dieu [Trudy Mat. Inst. Steklov. 114 (1970); MR 46 #2383], where such important parts of mathematics as locally convex topological spaces and distributions are constructivized. (II) The author neglects the fact that many routine repetitions of classical proofs can be changed to **applications** of a metatheorem of M. G. Gel'fond [Zap. Nauchn. Sem. Leningrad. Otdel. Mat. Inst. Steklov. (LOMI) 32 (1972), 5 - 11; MR 49#8827] (or a recent one of Beeson) to classical results. This makes all so-called ϵ -theorems rather trivial: e.g., ϵ -eigenvector: take a constructive denumerable dense $\{x\{sub\}n\}$ in the unit sphere; some $x\{sub\}n$ is an ϵ -eigenvector classically, hence constructively; so one can compute $\{dvert\}Ax\{sub\}i - \lambda x\{sub\}i\{dvert\}$ with precision $\epsilon/2$ for $i=1, 2, \dots$ and wait until $\{dvert\}Ax\{sub\}i - \lambda x\{sub\}i\{dvert\} < \epsilon$ -- this $x\{sub\}i$ is the desired vector (similarly for the Stone-Weierstrass theorem, ϵ -spectral theorems, etc.). Using Gel'fond's result, one can prove for uniformly continuous f on a compact K that $\{turn\}\{sub\}G$ {exists} $\{!x(fx=0)\}$ (G a formal system for classical **analysis**, used by Gel'fond) implies {exists} $x(fx=0)$. Corollary: If $f\{sub\}i, g: K\{arrr\}R$ are such that the best approximation $\{\sum\} \alpha\{sub\}i f\{sub\}i$ to g is (classically) unique -- e.g., for polynomials -- then it is algorithmic (see the reviewer's works [Abstracts of the IV Students' Scientific Conference (Leningrad, 1975), pp. 19 - 21, Leningrad. Gos. Univ., Leningrad, 1975; see MR 56 #15245; **Categories of space-time models** (Russian), Candidate Thesis, Novosibirsk, Gos. Univ., Novosibirsk, 1979] although the author claims that his corresponding theorem 'ends the 100-year-old search for a constructivist proof'). Other corollaries: (1) If T is a 1-dimensional semigroup of automorphisms on compact K and $\{turn\}\{sub\}G$ {exists} $\{!invariant\ measure\ \mu\}$ then μ is computable. (2) For every compact Lie subgroup Γ of

a compact Lie **group** G there is a left-invariant μ on G/Γ . There are algorithms giving (3) a geodesic **joining** a, b in a compact Riemann **space** if it is classically unique, (4) the volume of the solution of Lebesgue's covering problem and this very solution if it is (classically) unique. (III) The overall impression one gets is in part that the book is "too late": It is clear now that constructive mathematics is far from the real **calculations**: when it claims that there is no algorithm (e.g., $x=0(\veebar)x(\neg 0)$), computers do compute that; vice versa, every look-through algorithm is a computing procedure, but no one can really perform 2^N steps for $N \geq 300$. So further investigation of almost everywhere applicable algorithms and subrecursive **analysis** is necessary. For example, by a time polynomial (TP)-algorithm let us understand a pair consisting of an algorithm that finishes work with n after $\leq p(l(n))$ steps ($l = \text{length}$) and a polynomial p (this class is closed under superposition). We will understand formulas constructively, but with TP-algorithms instead of arbitrary computations (then the Markov principle, induction, recursion and Carnap rule become valid, because $\{ \text{not} \} \{ \text{all} \} x \{ \text{exists} \} y (y = 2^{\sup} x)$). Reals R and arithmetic operations with them, as well as convergence, are **defined** as in Bishop's work (op. cit.); in this sense R is complete, but the Leibniz convergence criterion for series is invalid. One can prove that any metric **space** can be completed. A function $f(x)$ is a TP-computation, using x as an oracle, and consistent with $=$. R is a set of fixed point reals. Floating point reals $R_{\text{sub}2}$ (pairs (n, x) with **semantics** $2^{\sup} n(\cdot x)$) are TP-nonequivalent (e.g., $\text{exp}: R \text{ arrr} R$ is not TP, $\text{exp}: R \text{ arrr} R_{\text{sub}2}$ is; $\text{sin}: R \text{ arrr} R$ is, but $\text{sin}: R_{\text{sub}2} \text{ arrr} R$ or $R_{\text{sub}2}$ is not). Equality of reals is undecidable. There is a TP-algorithm giving x with $\{ \text{vert} \} f(x) \{ \text{vert} \} < k^{\sup} (-1)$ for any TP $f: f(0) < 0 < f(1)$, but there is no TP-algorithm giving a root of such f . The existence of a TP-algorithm giving $\sup f$ for any uniformly continuous (TP-) $f: [0, 1] \text{ arrr} R$ is equivalent to "any look-through problem is TP-decidable" ($P=NP$). If they are decidable, then Riemann **integration** is TP-computable. Further investigation is necessary. In spite of all that, the book is wonderful and the reviewer recommends it to anyone who wants to get acquainted with modern constructivism.)

Reviewer: V. Ja. Kreinovic

Review Type: Signed review

(Zbl 401:03027)

Descriptors: *03F65 -Mathematical logic and foundations-Proof theory and constructive mathematics-Other constructive mathematics (See also 26E40, 46S30, 47S30) ; 41A50 -Approximations and expansions (For all approximation theory in the complex domain, see 30E05 and 30E10; for all trigonometric approximation and interpolation, see 42A10 and 42A15; for numerical approximation, see 65Dxx)-Best approximation, Chebyshev systems; 41A65 -Approximations and expansions (For all approximation theory in the complex domain, see 30E05 and 30E10; for all trigonometric approximation and interpolation, see 42A10 and 42A15; for numerical approximation, see 65Dxx) -Abstract approximation theory (approximation in normed linear spaces and other abstract spaces); 46-02 -Functional analysis (For manifolds modeled on topological linear spaces, see 57N20, 58Bxx)-Research exposition (monographs, survey articles)

19/5/7 (Item 5 from file: 239)

DIALOG(R)File 239:Mathsci

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01668423 MR 82f#03002

Modern logic---a survey.

Historical, philosophical, and mathematical aspects of modern logic and its applications. Edited by Evandro Agazzi.

Contributors: Agazzi, Evandro

Publ: D. Reidel Publishing Co., Dordrecht-Boston, Mass.,

1981, viii+475 pp. ISBN: 90-277-1137-2

Series: Synthese Library, 149.

Price: Dfl. 130.00.

Language: English

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Document Type: Book; Proceedings
Journal Announcement: 1311
Modern logic---a survey; Logic
Subfile: MR (Mathematical Reviews) AMS
Abstract Length: LONG (439 lines)

The editor's preface declares that the purpose of these papers (presented in Rome to the Italian Society of Logic and Philosophy of Science in Sept. 1976) was "to provide a general appreciation of modern logic without need of any specific technical competence. In other words, the cultural position and role of logic was hoped to become apparent, rather than the exact patterns of its technical machinery." Perusal of the table of contents shows that some of the best qualified and most eminent mathematicians, logicians, and philosophers working in various areas of logic have undertaken to **describe** the current state of their specialty to nonspecialists. The papers will be commented upon in the **order** of their appearance. Contents: Evandro Agazzi, Preface (pp. vii - viii). Part 1. Introduction: J. M. Bochenski, The general sense and character of modern logic (pp. 3 - 14); Stanislaw J. Surma, The growth of logic out of the foundational research in mathematics (pp. 15 - 33). Part 2. Pure logic: Kurt Schutte, Proof theory (pp. 37 - 43); Angus Macintyre, Model theory (pp. 45 - 65); G. Kreisel, Constructivist approaches to logic (pp. 67 - 91); Jon Barwise, Infinitary logics (pp. 93 - 112); A. Rose, Many-valued logics (pp. 113 - 129); Nuel D. Belnap, Jr., Modal and relevance logics: 1977 (pp. 131 - 151). Part 3. The interplay between logic and mathematics: E. Casari, Logic and the foundations of mathematics (pp. 155 - 166); Gaisi Takeuti, Logic and set theory (pp. 167 - 171); Hans Hermes, Recursion theory (pp. 173 - 195); A. S. Troelstra, The interplay between logic and mathematics: intuitionism (pp. 197 - 221); Jens Erik Fenstad, Logic and **probability** (pp. 223 - 233); Gonzalo E. Reyes, Logic and **category** theory (pp. 235 - 252). Part 4. The relevance of logic to other scientific disciplines: Evandro Agazzi, Logic and the methodology of empirical sciences (pp. 255 - 282); Jaakko Hintikka, Standard vs. nonstandard logic: higher- **order**, modal, and first- **order** logics (pp. 283 - 296); Corrado Bohm, Logic and computers (pp. 297 - 309); Gerald J. Massey, Logic and linguistics (pp. 311 - 329); M. L. Dalla Chiara [M. L. Dalla Chiara Scabia], Logical foundations of quantum mechanics (pp. 331 - 351); L. Jonathan Cohen, Inductive logic, 1945 - 1977 (pp. 353 - 375). Part 5. Logic and philosophical topics: Czeslaw Lejewski, Logic and ontology (pp. 379 - 398); Georg Henrik von Wright, Problems and **prospects** of deontic logic: a survey (pp. 399 - 423); Bas C. van Fraassen, Report on tense logic (pp. 425 - 438); R. Stalnaker, Logical semiotic (pp. 439 - 456); Ch. Perelman, Logic and rhetoric (pp. 457 - 463); Index of names (pp. 465 - 472); Index of subjects (pp. 473 - 475). In the opening paper J. M. Bochenski distinguishes modern (symbolic, mathematical, or formal) logic from other traditions of logic. The distinguishing mark of modern logic is that it is mathematical, yet it differs from all other branches of mathematics because of its greater generality, rigor, and intimate **connection** with philosophy. The title of S. J. Surma's contribution is misleading. The author claims that mathematics and foundational research have been only one source for developments in modern logic. In what follows, he gives seven mathematical ways of selecting the theses of classical sentential logic and that of Lukasiewicz. The seven ways are axiomatization, natural deduction, dyadic trees, Gentzen sequents, use of a consequence **relation**, selection by use of a **notion** of consistency, and selection by use of a **notion** of completeness. The paper does offer clear presentations of these methods and is suitable for the introductory part of the book. K. Schutte's report on work in proof theory is better suited for Part 3 than Part 2 on so-called pure logic. After reminding us that proof theory was established with Hilbert's **program**, and that Godel's 1931 incompleteness theorem showed that the Hilbert **program** of proving the consistency, by finitary methods, of particular branches of mathematics could not be carried out for the most significant branches, the author reports new directions in proof theory. He sketches the development of the new directions set by Gentzen, which are proofs of consistency by cut-elimination or near cut-elimination and approximations to finitary proofs for parts of mathematics. He provides a

brief but technical sketch of the use of transfinite induction restricted to certain transfinite ordinals in consistency proofs which approximate finitary proofs. Angus Macintyre opens by proclaiming that a talk on model theory is misplaced in a section entitled pure logic. He writes: "In my view model theory is now a mathematical discipline increasingly detached from foundational questions."9 The remainder of his paper is addressed to those mathematicians specializing in model theory. He provides a historical survey while pointing out present directions of research. His observations are enriched with references to a large bibliography. This paper is, perhaps, a suggestive synopsis for model theorists. The average logician and philosopher can profitably skim through this paper to become acquainted with the current terminology and interests of model theorists. G. Kreisel's paper on approaches to constructivist logic indicates that he gave a sparkling address to the conference. Nevertheless, features such as having a "natural conversational flow" with several allusions and asides which constitute a brilliant oral presentation make it difficult to summarize his paper accurately. Insofar as this reviewer grasped some of Kreisel's ideas, one of his main themes is that we should approach applications of and studies about constructivist logics only if these applications and metalogical studies are mathematically interesting for their own sake. Kreisel considers the investigation of expressive and deductive completeness for constructivist logics to be interesting because such investigations lead to more comprehensive metalogical theories. The negative aspect of this theme denies the importance of revising mathematical practice to conform to a constructivist logic, as well as the importance of investigating constructivist logics because only such a logic provides a firm foundation for mathematical inference. Jon Barwise succeeds in reaching the goal of this volume while still offering something of interest to specialists in infinitary logic. He makes a case that we need to use infinitely long formulas to express mathematical ideas of finitude. He observes that after the failure of the Hilbert program there is no excuse for restricting attention to formulas which can be treated as finite objects. The general reader is presented with a glimpse at logics with infinitely long formulas, made aware that investigations of such languages are significant, and offered a useful bibliography. Specialists are offered sophisticated review remarks on the omitting types theorem to support a claim that "the omitting types theorem is one of the most basic results of infinitary logic."9 Specialists will be interested in the appendix showing that Novikov's theorem on regular formulas is correct. A. Rose's report on many-valued logics serves well this volume's purpose of informing people who have some familiarity with modern logic about a special area of modern logic and what is currently being done in that area. After noting how many-valued logics are used in independence proofs, the author offers a comprehensive survey of the systems of many-valued logics originated by Post and Lukasiewicz. This survey, whose technical details provide clear and essential guides for the general reader, shows what many-valued logics are and offers a vista of the vast extent of such logics. There is information about current work with reference to a bibliography containing major works since N. Rescher's 1965 bibliography on many-valued logics [see Many-valued logic, McGraw-Hill, New York, 1969; Zbl 248:02023]. There are asides on interpreting multiple truth-values in this well-written paper which could even be used to introduce students to many-valued logics. In his nontechnical paper on modal and relevance logics, Belnap offers significant technical challenges about relevance logics which can be readily appreciated. He outlines the development of the treatment of necessity and possibility in sentential logic, in first-order quantification theory, in type theory and set theory, in formal arithmetic, and in the analysis of functions. He raises philosophical questions involved in interpreting quantified modal formulas and challenges logicians to investigate use of modalities in set theory. Besides surveying current work, the author challenges logicians to tackle the decision problem for the sentential system E of entailment, to try to prove completeness for a first-order quantified entailment system, and to work with R. K. Meyer on the development of arithmetic based on an entailment logic. He closes with a

suggestion that we try to develop a relevant recursion theory. As we move to Part 3, the title 'The interplay between logic and mathematics' does not tell us precisely what to expect. E. Casari's informal paper is well suited as an introductory essay for Part 3 as well as being accessible to the general reader. The author discusses the use, in recent times, of logic in two types of work on the foundations of mathematics: rigorization and justification. Rigorization is the effort to re-express mathematical claims and reasoning clearly, precisely, and completely. Of course, people are frequently concerned with both types of foundational research. It could be said that Hilbert's **program** was an attempt to provide justification by showing that a rigorization was consistent. Takeuti's very short paper raises intriguing questions about set theories based on intuitionistic and quantum logics as well as on classical logic. The paper is primarily a call for new research in building set theories on such logics. It will be challenging to build a set theory on quantum logic because extensionality fails. Hans Hermes gives a clear summary, for nonspecialists, of major results and areas of recursion theory. After explaining how decidability problems can be reduced to questions about computability, he briefly characterizes several **notions** of computability, takes note of the fact that these **notions** have been proved equivalent, and points out the significance of Church's thesis. The reader is told the **place** of the halting problem, the word problem, Hilbert's tenth problem, degrees of unsolvability, and degrees of complexity in **relation** to the theory of computability. The domino problem is explained. There is an ample bibliography for this paper, which tells the general reader what recursion theory is. A. S. Troelstra's paper on logic, mathematics, and intuitionism is a comprehensive report on current investigations of the intuitionistic way of doing mathematics and developing a logic. However, appreciation of the details requires technical work and presupposes familiarity with intuitionistic mathematics. Nevertheless, the general reader is offered an accessible account of difficulties with special intuitionistic mathematical objects such as free choice sequences and the **idealized** mathematician. There are comments on the way intuitionists base logic on mathematical practice and remarks on the current state of completeness proofs for intuitionistic predicate logic. A good bibliography is attached. In his discussion of the interplay of **probability** theory and logic, J. E. Fenstad uses techniques and **concepts** which will not be familiar to nonspecialists to formulate claims and theorems. Fortunately, nonspecialists in this area can still attain an overview of recent uses of modern logic and its techniques to investigate **probability**. He divides his survey into three parts. The first discusses **probability** functions **defined** on formal languages, with especial reference to work of H. Gaifman. The second part surveys various **connections** between randomness and recursion theory. The final part gives a glimpse into the recent **applications** of nonstandard methods to the theory of stochastic processes. This topic involves representing infinite sequences by sequences of length k where k is a nonstandard (infinite) integer, and employs techniques of H. J. Keisler [Logic Colloquium 76 (Oxford, 1976), pp. 5 - 110, North-Holland, Amsterdam, 1977; MR 58 #10421]. In 'Logic and **category** theory' Gonzalo E. Reyes mentions the thesis that **category** theory provides a more comprehensive foundation for mathematics than does set theory. By now most mathematicians, logicians, and philosophers even slightly familiar with foundational studies are aware of this thesis. But many logicians, especially philosophers, lack a reasonably detailed **idea** of what the thesis says and why it is plausible. Unfortunately for the general reader this paper does not clarify the basic **notions** of **category** theory to the nonspecialist although it offers guides to the literature where the basic **ideas** may be acquired. The author addresses specialists by using topos theory to formulate rigorously the principle that in the infinitely small every function is linear. The argument for the principle involves use of a kind of infinitesimal. From this paper the average logician and philosopher receive a hint of the author's foundational position. The papers of Part 3 have shown this reviewer that the use of modern logic for the type of foundational research which E. Casari called justification is no longer an area of active interest. Agazzi presents an **ideal** paper to

begin Part 4 on the relevance of logic to other scientific disciplines. With ample bibliographic references, he gives a frank assessment of the role of logic in understanding the methodology of natural science. He reviews the use of formal languages to characterize scientifically meaningful sentences, to distinguish between theoretical and observation terms and sentences, to display the kinds of definitional **relations** between scientific **concepts**, to clarify reduction of theories, and to eliminate theoretical terms. By reference to work through the mid-1970s, he also discusses the use of formal languages to understand measurement, the interpretation of scientific theories, and theory change. He closes by acknowledging that the formal languages of logic are only one means for understanding some aspects of natural science. Appreciation of J. Hintikka's main point requires familiarity with the basic **ideas** of **semantics** for modal logics using frames consisting of systems of models (possible worlds). He makes a case that development of an adequate **semantics** for logical necessity requires a restriction in our metalanguage to quantification over only some sets of possible worlds. He compares this restriction on quantification over sets of models to the restriction of quantification in nonstandard models of second- **order** logic to cover only certain subsets of the set of individuals. The comparison is used to make a case that a proper understanding of logical modalities, amongst other **notions** needing clarification, warrants more investigation into the rather neglected study of higher- **order** languages. Because of the author's professional stature, this paper may be an indication that in the 1980s modern logic will contain more studies of higher- **order** languages than in the 1945 - 1979 period. At first glance the professed aim of C. Bohm's 'Logic and computers' seems narrow. He writes: 'The aim of this paper is to sketch the introduction of combinatory logic and lambda -calculus in a way that I hope will be satisfactory either from a tutorial or from an aesthetic point of view for both mathematicians and computer scientists. The **idea** is to extend the **concept** of integer in **order** to reach that of combinatory integer, or adding variables to this **concept**, that of combinatory integer form.'⁹ He presents an interesting axiom system of combinatory integer forms. He develops this system to show that it is a fusion of combinatory logic and Church's lambda -calculus and that all recursive functions can be represented in it. The author does provide a few suggestions on how such systems have **application** in computer science. For instance, a single expression may be either an operation (instruction) or an operand, depending upon its position **relative** to other expressions. But to those unfamiliar with machine languages such suggestions are only slight hints on how something recognizable as a system of logic has **application** to computers. Gerald J. Massey's 'Logic and linguistics'⁹ with its informative notes and bibliography is one of the papers written in the most appropriate way for those seeking a sophisticated but nontechnical overview of an area of modern logic. While supporting his thesis that logic bears to grammar the same **relation** that geometry bears to physics, the author traces the **application**, since N. Chomsky's book Syntactic structures, [Mouton, The Hague, 1957] of formal languages to represent the underlying forms of natural languages. He observes how linguistic considerations may influence the choice of a formal language to represent deep structures. The contention that the logic used is intimately **connected** with linguistic theory is further supported by arguments that assessments of validity of natural language arguments presuppose use of a linguistic theory of correct paraphrase. In 'Logical foundations of quantum mechanics,'⁹ M. L. Dalla Chiara refers to the major efforts in the 1960s and 1970s to formalize quantum theory, QT. Those who have not followed these efforts may find the details of this paper impenetrable. For instance, understanding her formalization of physical theories requires familiarity with the use of Borel sets and Hilbert spaces. Nevertheless, nonspecialists can reach an overview of how a major obstacle to understanding quantum mechanics is being by-passed. The obstacle is to understand how QT can encompass two different logics (systems of justified inference) in its deductive structure. She shows, with formidable technical details, how QT could be formalized and interpreted so that the main theory has classical logic while in a subtheory of an extension of QT a nonclassical logic such as the quantum

logic of Birkhoff and von Neumann can be introduced. The author acknowledges that showing how a single formalized and interpreted physical theory has two different logics in its deductive structure does not by itself provide an understanding of what is occurring when we can assert P by use of one logic but not by use of the other. Which logic should we use? She notes that it has been suggested that we can interpret assertability of P by use of this quantum logic as 'P is certain' or 'P is necessary' where necessity is interpreted in the modal system B of so-called Brouwer necessity. One could develop QT with a unified deductive structure which would be classical logic with system B as its modal extension. The author, however, seems resigned to working with a plurality of logics in physical theories.

Jonathan Cohen's clearly written critical survey of the use of formal languages in the study of inductive logic, 1945 - 1977, perfectly fulfills the volume's purpose of informing nonspecialists. Nevertheless, enough detail is presented to warrant careful study of his arguments. A major task of inductive logic is to systematize inferences from statements of evidence e to hypotheses h where the e provide only some degree of support for the h. Once the inferences are systematized, a second major task is developing a theory of how such measures of degrees of **relative** support justify acceptance of hypotheses. The author labels 'Pascalian' those approaches to inductive logic which require the degrees of **relative** support for h from e, $s(h/e)$, to obey the laws of classical **probability**. He shows how attempts of Carnap, Hintikka, I. Levi, K. Popper, and M. Hesse are all Pascalian. He argues that Pascalian approaches become entangled with Hempel's paradox of confirmation, Goodman's paradoxes, or the lottery paradox, besides being very misleading ways to an understanding of the practice of natural science. Cohen labels as 'Baconian' those approaches which include systematic features such as simplicity and the uniting of topics in assessing the support for a hypothesis, but which do not require degrees of hypothesis support to obey classical **probability** laws. The author sketches his own Baconian approach, according to which hypothesis support or '**probability**' of a nonclassical sort obeys the laws of the modal system S4. In part I of his two part philosophical paper, Lejewski discusses 'in very general and informal terms, the nature of logic and ontology, and the **relationship** that seems to **connect** these two disciplines'. The author takes the position that the universally valid formulas of quantification theory express truths of any acceptable ontology because they are true of all things in all possible worlds. He suggests that truths about part/whole **relations** of Lesniewski's mereology are truths of ontology even if not purely logical truths. He points out that part of any justified ontology will be justifying claims that possible worlds have only one **category** of objects or that they have different **categories** of objects. In part II the question is: How are we to express ontological commitment in a formal language? Lejewski examines and compares which expressions reveal existence and how existence claims are expressed in classical quantification theory, in free logics, and in his system L4 with special nonclassical quantifiers. He argues that L4 offers the most expressive capability for asserting and denying existence.

'Problems and **prospects** of deontic logic: a survey' by G. H. von Wright is a lucid survey of work on the logic for 'ought' and 'permitted'. After reading this paper a logician previously unfamiliar with deontic logic could start to do nonredundant work in this area. There are a few remarks on deontic logic before 1950. In 1950, O. Becker, J. Kalinowski, and von Wright began to develop deontic logic based on analogies with modal logics for necessity and **possibility**. The author comments upon the problems involved with the major approaches towards treating deontic logic as a modal logic. He makes some penetrating observations on some paradoxes and the ought-to-do versus ought-to-be distinction. He carefully dissolves Ross's paradox. The paper closes with a technical but readily accessible section in which von Wright develops in some detail his new approach in which being obligatory and being permitted are not treated as modal operators but as properties of individual actions.

B. C. van Fraassen's survey of tense logic focuses on how tenses combine with modal operators and conditionals and on whether past and future operators can be eliminated in favor of operators which pay no attention to the direction of time. There are references to

other papers for more complete development of approaches suggested in this paper. But enough details are presented for the reader to get a clear **idea** of the issues **connected** with mixing tenses with modalities. One also gains an appreciation of the problems involved with tenses in counterfactuals and uses of the indexical 'now.' He sketches the basis for his conclusion that tense operators can be eliminated in favor of special sentence constants which have an irreducibly context-dependent **meaning** plus operators which do not depend upon the direction of time. There is an optimistic spirit in R. Stalnaker's lucid nontechnical essay on logical semiotic. Yesterday, up to the mid-1930s, the study of the syntax of formal languages attained mathematical respectability, today the study of the formal reconstructions of natural languages has achieved mathematical respectability, and tomorrow, in the 1980s, the study of the pragmatics of formal representations of natural languages in context will attain mathematical respectability. The author observes: "Although pragmatics is a more tentative field of study than syntax or **semantics**, I believe the shape of a theory which is capable of rigorous development and fruitful **application** is beginning to emerge from the work of a number of philosophers, linguists, and logicians."9 The author promises: "I will sketch some of the central **concepts** of this theory, of the formal apparatus which I think will be useful in explicating and developing these **concepts**, and some of the problems that fall within the domain of the theory."9 He keeps his promise by suggesting how contexts of utterance could be represented as mathematically manageable structures by being sets of possible worlds and individuals. He traces out, with references to current literature, how such a **notion** of context could be used in understanding presupposition, the rôle of indexicals, and dependence of truth on context. This is a valuable proposal for pragmatics; let us hope that the **program** succeeds. Ch. Perelman's "Logic and rhetoric" indicating the limitations of modern formalized deductive and inductive logic as tools for assessing the strength of much of the argumentation of daily life and business is a suitable conclusion for this volume surveying modern logic. The author reminds us that there needs to be continuing work in that study which he has titled "the new rhetoric". In this study, standards of correctness are developed for assessing reasoning in the messy form in which it occurs in daily life. On the whole, and to this reviewer's surprise, this volume succeeds in offering to an average philosopher familiar with some modern logic an intelligible overview of current work and problems in most areas **associated** with logic. The few misprints caused no serious confusion.

Reviewer: Kielkopf, Charles F. (Columbus, Ohio)

Review Type: Table of contents

Descriptors: *03-06 -Mathematical logic and foundations-Proceedings, conferences, collections, etc. ; 01A60 -History and biography (See also the classification number --03 in the other sections)-History of mathematics and mathematicians-20th century; 03-02 -Mathematical logic and foundations -Research exposition (monographs, survey articles)

19/5/8 (Item 6 from file: 239)

DIALOG(R)File 239:Mathsci

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01640984 MR 81k#68003

Mathematical foundations of computer science, 1980.

Proceedings of the Ninth Symposium held in Rydzyna, September 1--5, 1980. Edited by P. Dembinski.

Contributors: Dembinski, P.

Publ: Springer-Verlag, Berlin-New York, 1980, viii+723 pp. ISBN: 3-540-10027-X

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Mathematical foundations of computer science,; Symposium: Mathematical Foundations of Computer Science,; Computer science; Rydzyna, 1980 9th

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Subfile: MR (Mathematical Reviews) AMS

Abstract Length: LONG (93 lines)

The eighth symposium has been reviewed (MR 81c:68004).)

From the foreword: "The ninth symposium on Mathematical Foundations of Computer Science (MFCS '80) was preceded by similar symposia held alternately in Poland (every even year) and Czechoslovakia (every odd year). This volume contains 7 invited papers and 46 short communications, selected from 108 papers submitted to the symposium." Contents:

Invited lectures: Dines Bjorner, Formal description of **programming concepts**: a **software** engineering viewpoint (pp. 1 - 21); R. M. Burstall, Electronic **category** theory (pp. 22 - 39); J. Hartmanis and S. R. Mahaney, An essay about research on sparse NP complete sets (pp. 40 - 57); Robert M. Keller, Some theoretical aspects of applicative multiprocessing (pp. 58 - 74); C. K. Wong, On some discrete optimization problems in mass storage systems (pp. 75 - 93); Wm. A. Wulf, Abstract **data** types: a retrospective and **prospective** view (pp. 94 - 112). Communications: A. Arnold and M. Nivat, Controlling behaviours of systems: some basic **concepts** and some **applications** (pp. 113 - 122); G. Ausiello, C. Batini and M. Moscarini, **Conceptual relations** between **databases** transformed under **join** and projection (pp. 123 - 136); X. Berenguer and J. Diaz, The weighted Sperner's set problem (pp. 137 - 141); E. Best, Proof of a concurrent **program** finding Euler paths (pp. 142 - 153); Wolfgang Bibel, A theoretical basis for the systematic proof method (pp. 154 - 167); J. Dean Brock, Consistent **Semantics** for a **data** flow language (pp. 168 - 180); Luca Cardell, Analog processes (pp. 181 - 193); Mario Coppo, An extended polymorphic type system for applicative languages (pp. 194 - 204); Wiktor Danko, A criterion of undecidability of algorithmic theories (pp. 205 - 218); P. Degano, A. Lomanto and F. Sirovich, On finding the optimal access path to resolve a **relational data base** query (pp. 219 - 230); H. Ehrig, H.-J. Kreowski, B. Mahr and P. Padawitz, Compound algebraic implementations: an approach to stepwise refinement of **software** systems (pp. 231 - 245); David Harel, On and/or schemes (pp. 246 - 260); M. C. B. Hennessy and G. D. Plotkin, A term model for CCS (pp. 261 - 274); Berthold Hoffmann and Ilse-R. Schmiedecke, A mathematical approach to multipass **parsing** (pp. 275 - 290); Ulrich L. Hupbach, Abstract implementation of abstract **data** types (pp. 291 - 304); Joseph Ja'Ja' and Janos Simon, Parallel algorithms in graph theory; planarity testing (preliminary version) (pp. 305 - 319); Ryszard Janicki, On atomic nets and concurrency **relations** (pp. 320 - 333); D. Janssens and G. Rozenberg, Node-label controlled graph grammars (extended abstract) (pp. 334 - 347); Kurt Jensen, A method to compare the descriptive power of different types of Petri nets (pp. 348 - 361); Herbert A. Klaeren, A simple class of algorithmic specifications for abstract **software** modules (pp. 362 - 374); Norbert Kraft and Horst Wedde, Inducing patterns of behaviour in distributed system parts (pp. 375 - 386); Ingbert Kupka, Van Wijngaarden grammars as a special **information** processing model (pp. 387 - 401); Y. S. Kwong and D. Wood, Approaches to concurrency in B-trees (pp. 402 - 413); Burkhard Monien, On a subclass of pseudopolynomial problems (pp. 414 - 425); Horst Muller, Decidability of reachability in persistent vector replacement systems (pp. 426 - 438); Seiichi Okoma, Generalized heapsort (pp. 439 - 451); Hiroakira Ono and Akira Nakamura, Decidability results on a query language for **data bases** with incomplete **information** (pp. 452 - 459); Peter Padawitz, New results on completeness and consistency of abstract **data** types (pp. 460 - 473); Judea Pearl, Asymptotic complexity of game-searching procedures (pp. 474 - 487); Helena Rasiowa, Completeness in classical logic of complex algorithms (pp. 488 - 503); H. Reichel, Initially-restricting algebraic theories (pp. 504 - 514); Wolfgang Reisig, Schemes for nonsequential processing systems (pp. 515 - 527); Jan Reiterman and Vera Trnkova, Dynamic algebras which are not Kripke structures (pp. 528 - 538); Peter Ruzhichka, Time and **space** bounds in producing certain partial **orders** (pp. 539 - 551); Andrzej Salwicki, Axioms of algorithmic logic univocally determine **semantics** of **programs** (pp. 552 - 561); V. Yu. Sazonov (V. Ju. Sazonov), A logical approach to the problem "P=NP?" (pp. 562 - 575); M. W. Shields and P. E. Lauer, Verifying concurrent system specifications in COSY (pp. 576 - 586); Joseph Sifakis, Deadlocks and livelocks in

transition systems (pp. 587 - 600); Giora Slutzki, Descriptive complexity of concurrent processes (preliminary version) (pp. 601 - 611); Stefan Sokolowski, A uniform approach to applicative and imperative features in **programming** languages (pp. 612 - 626); Zbigniew Suraj, A resource allocation problem (pp. 627 - 642); Tadao Takaoka and Alistair Moffat, An $O(n^2 \log n \log \log n)$ expected time algorithm for the all shortest **distance** problem (pp. 643 - 655); M. K. Valiev, Decision complexity of variants of propositional dynamic logic (pp. 656 - 664); Paul M. B. Vitanyi, **Relativized** obliviousness (extended abstract) (pp. 665 - 672); M. Wirsing and M. Broy, Abstract **data** types as lattices of finitely generated models (pp. 673 - 685); Jacek Witaszek, The LR(k) **parser** (pp. 686 - 697); H. J. Genrich, K. Lautenbach and P. S. Thiagarajan, Substitution systems -- a family of system models based on concurrency (pp. 698 - 723). (The papers of mathematical interest are being reviewed individually.)

Reviewer: Editors

Review Type: Table of contents

Descriptors: *68-06 -Computer science (For papers involving machine computations and programs in a specific mathematical area, see Section --04 in that area)-Proceedings, conferences, collections, etc.

19/5/9 (Item 7 from file: 239)

DIALOG(R)File 239:Mathsci

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01601897 MR 80m#68007

Fundamentals of computation theory.

Proceedings of the Conference on Algebraic, Arithmetic and Categorical Methods in Computation Theory held in Berlin/Wendisch-Rietz, September 17--21, 1979. Edited by Lothar Budach.

Contributors: Budach, Lothar

Publ: Akademie-Verlag, Berlin, 1979, 576 pp.

Series: Mathematical Research, 2.

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Document Type: Book; Proceedings

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Fundamentals of computation theory; Conference: Fundamentals of Computation Theory;; Conference: Algebraic, Arithmetic, and Categorical Methods in Computation Theory;; Computation theory; Berlin/Wendisch-Rietz, 2nd International International 1979

Subfile: MR (Mathematical Reviews) AMS

Abstract Length: LONG (141 lines)

The first conference has been reviewed (MR 57 #11147).) From the preface: "This volume constitutes the proceedings of the 1979 International Conference on Fundamentals of Computational Theory ('Algebraic, Arithmetic, and **Categorical** Methods in Computation Theory') held in Wendisch-Rietz near Berlin, German Democratic Republic, September 17 - 21, 1979. The papers of this volume were either invited addresses or were selected, from more than 100 papers submitted in response to the Committee's call for papers, on the basis of both quality and relevance to areas of current interest. The contents of these proceedings have not been formally refereed. The authors are fully responsible. The papers were presented either as plenary talks or in one of the following sections: A. Algebraic and constructive theory of machines, computations, and languages; B. Computation theory in **categories**; C. Computability, decidability and arithmetic complexity. The conference was **organized** by the Central Institute for Mathematics and Mechanics of the Academy of Sciences of the German Democratic Republic and by the Department of Mathematics of Humboldt-University (Berlin)."

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Reviewer: Editors

Review Type: Table of contents

Descriptors: *68-06 -Computer science (For papers involving machine computations and programs in a specific mathematical area, see Section --04 in that area)-Proceedings, conferences, collections, etc.

19/5/10 (Item 8 from file: 239)

DIALOG(R) File 239:Mathsci

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The papers in this collection are arranged under six main headings and 74 sub-headings (the latter are indicated in parentheses in the following partial table of contents): Jack L. Rosenfeld, Preface (p. v); Per Svenonius, Congress chairman's foreword (p. xvii); Herbert Freeman, Programme committee chairman's foreword (p. xix); H. Zemanek, Introduction (p. xxi).

Computer hardware and architecture: (Computer hardware and software; Computer networks. I; Computer hardware. I; Computer design. I; Theory of

computer design; Hardware for computer graphics; Computer design. II; Fault diagnosis; Computer hardware. II; Hardware trends and future outlook; Computer networks. II; Switching problems) (pp. 1--174).

Software: (Software reliability; Software design; Programming systems; Measurements, performance and models of computer systems; Software system implementation; Improving memory utilization; System performance and optimization; Software problems in computer networks; Current topics in programming; General problems of programming; Scheduling and allocation; Data representation; Compiling techniques; Programming methodology. I; Procedures and block structures; Programming methodology. II; File structure and accessing) (pp. 175--444).

Mathematical aspects of information processing: (Differential equations; Formal models of parallel computation; Numerical analysis and symbol manipulation; Algorithms in graph theory; Combinatorial algorithms; Matrix computation; Software packages for numerical computation; Nonlinear programming; Logic and data bases; Models of natural language text; Numerical methods; Theory of computation; Approximation methods; Storage mapping algorithms; Automata theory; Numerical analysis; Computational complexity) (pp. 445--687).

Technological and scientific applications: (Pattern recognition; Computer graphics; Picture processing; Methods in pattern recognition; Computer-aided design; Artificial intelligence and control applications; Artificial intelligence) (pp. 689--833).

Applications in the social sciences and the humanities: (Analysis of literary texts; Computers and art; Computers in the humanities; Computer assisted instruction; Teaching computer science; Social implications; Natural language processing; Computers in social and economic development) (pp. 835--933).

Systems for management and administration: (Theoretical aspects of information systems for management; Design and implementation of management information systems; Economics of information processing; Files and data management; Data base management systems; Data base design; Business applications of information systems; Applications of interactive computing; Information systems for governmental administration; Control aspects of management and information systems) (pp. 935--1095).

IFIP Organization (pp. 1097--1098); IFIP Congress Organization Committee (p. 1099); Author index (pp. 1101--1103); Subject index (pp. 1105--1107).

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\{The papers will be indexed both under the names of the authors and under the following title: Information processing 74 (Proc. IFIP Congress, Stockholm, 1974).\}

Reviewer: Editors

Review Type: Abstract

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?t s19/5,k/11-13

19/5,K/11 (Item 1 from file: 696)
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written a chapter in the Ledingham book (with Yi-Hui Huang) on the topic, as has Glen Broom, another member of the commission. In addition, Lauri Grunig and I wrote an **insert** for a trade publication in the Sept. 7, 1998, issue discussing the measurement of **relationships**. Linda Hon (a third member of the commission), Kitty Ward (participant in the first summit), and I are working on a paper summarizing the work on **relationships** that the Institute may publish.

Agency: Linda Hadley Senior VP/Director of Research Porter/Novelli
The commission was created, of course, in response to increased demand for standards for measuring the effectiveness of PR **programs**. PR **programs** can and do have measurable impact on audience awareness, attitudes and behavior. We on the agency side...

...important functions of the commission.

We need to: first, build recognition of the need to tie PR **programs** more closely to the business objectives of our clients - because when we do not, evaluating their success becomes a game of Russian roulette; second, build our skills in setting **program** objectives that are clear and measurable and that identify the best role for PR in achieving business or **organizational** objectives, and third, ...want may already have been done.

All you need to do is a literature search and secondary **analysis**. Be flexible: Telephone polls and focus **groups** aren't your only research channels.

Consider mall intercept studies, mail surveys, **analysis** of media reports, online studies, face-to-face interviews and role-playing or piggybacking on a large market research company's omnibus poll.

Define in advance how the results are going to be used.

Remember that for most PR practitioners, "why...

...the way they do and what it will take for them to change their minds.

Give serious **thought** to the total population to be studied. If a sample isn't randomly selected, then questions should...

...Hadley, Porter/Novelli

Research: Walter Barlow, Research Strategies Corp.,
John Gilfeather, Yankelovich Partners,
Katharine Paine, The Delahaye **Group** Inc.,
Mark Weiner, MediaLink
Academic: Dr. Glen Broom, San Diego State University,
Dr. James Grunig, University of...

19/5,K/12 (Item 2 from file: 696)
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00610782

**XML/EDI VS. OBJECT ORIENTED-EDI TWO FUTURE EDI PROPOSALS VIE FOR ATTENTION
AMONG ASC X12 MEMBERS**

EDI NEWS

June 22, 1998 VOL: 12 ISSUE: 13 DOCUMENT TYPE: NEWSLETTER

PUBLISHER: PHILLIPS BUSINESS INFORMATION

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By most accounts the latest meeting of the American National Standards Institute's Accredited Standards Committee X12 was one of the quietest on record. But just beneath the surface a

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COMPANY NAME(S): American National Standards Institute ; ASC X12 ; Concepts In A Technology ; Denver University ; DISA ; Electronic Commerce ; EDI ; Gartner Group ; Graphic Communications Association ; Methodologies Working

Group ; POET Software ; RosettaNet Consortium ; Standards Association ; Standards Institute ; Strategic Implementation Task Group ; Techniques ; United Nation 's Center for Facilitation of Practices and Procedures ; World Wide Web Consortium ; XML/EDI Group

TEXT:

...hyper-growth.

While the current user base is estimated to be 150,000, Stamford, Conn.-based Gartner **Group** [GART] **calculates** the potential to be 6 million.

The next generation of EDI must be broadly interoperable, non-proprietary, inexpensive and easy to use.

Simply put, EDI must be convertible into off-the-shelf **software**.

ASC X12's Strategic Implementation Task **Group** - which met during ASC X12's June 1 through June 5 trimester meeting in Columbus, Ohio - is promoting a combination of object-oriented **software** technology models called "business objects," a type of blue print of business practices that can be followed to create EDI **software**.

The task **group** is using Framingham, Mass.-based Object Modeling **Group**'s Unified Modeling Language (UML) to model common business practices behind the types of transactions EDI seeks to automate.

Meanwhile, in X12C - the Communications and Controls

Subcommittee - a permanent task **group** will map X12 transaction sets to XML/EDI, a new marriage between the Extensible Markup Language and...

...in October 1997 by the Cambridge, Mass.-

based World Wide Web Consortium to head off a major **fragmentation** of the Web into non-interoperable, proprietary fiefdoms.

Now XML, and its E-business cousin XML/EDI...

...end of May, just days before the ASC X12 meeting, two

Alexandria, Va.-based industry associations - the **Data** Interchange Standards Association (DISA) and the Graphic Communications

Association - announced support for the XML/EDI effort.

DISA is the secretariat for ASC X12. The Graphic Communications

Association is a technical management **organization** in the publishing and printing industries that has supported XML since its creation in 1997.

The Graphic Communications Association's research institute is acting as the XML/EDI **Group**'s secretariat. The **group** is coordinating work among different **organizations** interested in the new technology.

XML/EDI Gains Supporters

Supporters of the XML/EDI **Group** are sprouting up everywhere.

Organizations that are working on XML/EDI in unison with the XML/EDI **Group** include the RosettaNet Consortium, W3C, CommerceNet and UN/EDIFACT.

In a **related** effort, Denver University's Electronic Commerce Department is collaborating with the XML/EDI **Group** to develop a pilot XML repository system. The pilot is using San Mateo, Calif.-based POET **Software**'s new POET CMS object oriented **data** store, which is XML **document** compliant and operates over the Web. Such repositories are a crucial component of the overall XML/EDI

The EDI standards **group** for health care, HL7, has decided to adopt XML/EDI, and the XML/EDI **Group** is soliciting other industry and government enterprises and associations.

"My perspective is that XML/EDI being formally...

...X12,

that's going to definitely be the trend here in the states," says Chuck Shih, technology **analyst** for Stamford, Conn.-based Gartner

Group. "Not just DISA and X12 are adopting it, but a whole slew of industry-specific folks are too. RosettaNet in the IT industry will try to lay out the XML grammars and **semantic** repositories or common business processes within the IT industry.

"If you listen to the XML/EDI **Group**, the ultimate vision is not just to put up the **semantic** repositories, but also to put up common

ways of handling the messages; you know, Java applets, those kinds of things that will actually work on the **data**," he continues. "So that becomes like an OO- (object oriented) model."

Shih thinks such a model would...

...EDI NEWS, May 12, 1997) proposed by Klaus-Dieter Naujok, chairman of the Techniques and Methodologies Working **Group** of the United Nation's Center for Facilitation of Practices and Procedures for Administration, Commerce and Transport...

...similar to XML/EDI in that both seek ways to interface with today's preferred method of **software** development, distributed, object-oriented **programming**.

But while XML/EDI combines **programming** approaches to several parts of the EDI puzzle, including ways to transport, format and manipulate the **data** contained in the EDI message, oo-EDI sticks with standardizing the business practices that must be modeled and turned into EDI **applications**. That approach gives ASC X12 a clearly **defined** role to play because the business processes are what it knows best. The oo-EDI approach probably...

...adopted by CEFAC, while

XML/EDI will become popular in the United States, Shih says.

In practice, **data** interpretation will remain a problem with XML/EDI, just as it is with standard EDI, says Doug...

...of X12I, the transportation subcommittee. Companies still will find slightly different meanings in the same bits of **information**, Anderson contends. Overcoming that problem is the reason the **concept** of **semantic** repositories was developed to begin with, but Anderson says the problem will not be solved by them...

...still will be interpretation problems, he says.

ASC X12 Members Learn UML

While X12C focuses on the **possibility** that XML/EDI might help reduce the complexity of EDI, the Strategic Implementation Task **Group** is promoting the Unified Modeling Language (UML) as a way to create business objects that then can be turned into **software** using oo-EDI. ASC X12 adopted the use of object modeling a year ago, and in April an interim meeting of the task **group** decided to adopt UML as its preferred modeling method.

As a result, more than 50 ASC X12...

...7000; Harry Featherstone, ASC 12, 703/917-7210; Kendra Martin, ASC, 202/682-8517; Chuck Shih, Gartner **Group**, 203/316-1111; David Webber, the XML/EDI **Group**, 301/341-1749.)

XML/EDI: **Concepts** In A Technology Concert

The XML/EDI model capitalizes on many technologies. XML/EDI:

- * uses the XML protocol as its **data** interchange modeling layer;
- * uses the XML Style Language (XSL) protocol as its presentation layer;
- * can be **integrated** with traditional methods of EDI;
- * can be used with all standard Internet transport mechanisms such as Internet protocol routing, hypertext transfer protocol, **file** transfer protocol and simple mail transfer protocol;
- * allows for **document**-centric views and processing methodologies;
- * uses modern **programming** tools such as Java and ActiveX to allow **data** to be shared between **programs**; and
- * uses agent technologies for **data** manipulation, **parsing**, **mapping**, searching.

Source: XML/EDI **Group**

19/5,K/13 (Item 3 from file: 696)
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00599730

CAN BASIC SEMANTIC REPOSITORIES MAKE A COMEBACK? The International Standards Organization Is Betting On It

EDI NEWS

April 13, 1998 VOL: 12 ISSUE: 8 DOCUMENT TYPE: NEWSLETTER

PUBLISHER: PHILLIPS BUSINESS INFORMATION

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Future EDI is nothing without simple, inexpensive applications to attract small and medium enterprises to adopt the technology. Some hope the revival of basic semantic repositories (BSR)

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COMPANY NAME(S): American National ; ANSI ; Department of Defense ; Environmental Protection ; EDI ; Fairmont ; Harbinger Corp ; International Standards ; ManTech Advanced System International Inc ; Standards Institute ; University of Denver ; XML/EDI Group

TEXT:

Future EDI is nothing without simple, inexpensive **applications** to attract small and medium enterprises to adopt the technology. Some hope the revival of basic **semantic** repositories (BSR) may achieve that end.

Once a darling of EDI standards bodies, BSR now polarizes industry...

...manager for Atlanta-based Harbinger Corp.'s [HRBC] Premenos division.

Others are equally convinced of BSR's **value**.

"BSR is doing a useful job of cataloging what exists in traditional EDI," says David Webber, an **information** technology consultant with a Washington practice.

At the center of this tumultuous struggle is Denis Hill, basic **semantic** repository project manager for the International Standards **Organization**. The Geneva-based **organization** is the international body to which standards **groups** from around the world belong.

Coming To America

Hill's objective is to reintroduce **semantic** repositories to U.S. EDI users and developers, proving the **concept** still has a role to play in future EDI efforts. Hill **defines** a basic **semantic** repository as an internationally approved register of multilingual **data** **concepts** with its accompanying technical infrastructure. In other words, Hill wants to create a **database** of EDI business terms in multiple languages and multiple **data** formats.

While each major form of EDI has its own official **dictionary** of **data** elements, Hill's repository would translate amongst them. EDI messages in German would be a snap to...

...The goal is to make BSR the international EDI Rosetta stone.

Humble Beginnings

Development of the BSR **concept** began in 1990. Before that time there were several EDI directories, including American National Standards Institute's...

...s EDIFACT.

Naujok, a founder of the project, supports the decision in 1996 by U.N. EDI **groups** and New York-based ANSI's EDI **group** to end their

participation in the effort.

"We realized that that was not an achievable goal," Naujok says.

"It would be too complicated."

Hill's **concept** of BSR was too broad, Naujok says, going way beyond the original **conception**.

Naujok now is committed to the development of object-oriented EDI. Sponsored by the United Nations and ANSI, the next-generation project is modeled on user-friendly object **programming**.

"We had hoped that [BSR] would help X12 and EDIFACT align," Naujok says. "We have finished that..."

...of Fairmont, W.Va.-based

ManTech Advanced System International Inc. Mantech is principle developer of the Universal **Data** Element Framework, a project funded by the Department of Defense's Continuous Acquisition and Life-cycle Support (CALS) **program**.

"It was ...harmonized with STEP

[Standard for the Exchange of Product] and that there is a body of existing **maps** and bridges from X12 to EDIFACT," he says.

Hill also met with officials of the Environmental Protection

Agency and representatives of the XML/EDI **Group**.

Webber, along with other EDI mavericks, founded the Internet-based XML/EDI **Group** to create an EDI **application** from Extensible Markup Language.

A new scripting tool for easily developing interactive Web pages, XML has found an adoring audience in the EDI world. As a result, the XML/EDI **Group** is growing into a major association.

"The other thing BSR provides is an initial base or foundation..."

...Webber says.

If Hill could attract heavy hitters on the federal level, he would have a better **chance** of converting developers and users.

Attempting To Work Hand In Hand

Hill hopes to develop BSR into a tool that will make EDI

applications cheaper and simpler. Furthermore, he says BSR can help develop object-oriented EDI.

"Whether you are in the current **relational database** environment or in the object-oriented **data** environment, you still need to name and **define** your **data**, and you need to identify it," Hill says. "This is going to be required whether you do..."

...So I think it's

pivotal, but it will need wide scale acceptance."

Bruce Peat, XML/EDI **Group** co-founder, says BSR is an important adjunct in his **group**'s attempt to create an inexpensive, simple EDI **application**.

"I think BSR fits in really well with XML," Peat says. "Denis [Hill] has spent an awful..."

...with Hill on a position paper to explore

such an opportunity. They are also working with a **group** at the University of Denver to create a working basic **semantic** repository, says Webber. (Mike Evanoff, Denis Hill, ISO, 41 22/749-7233; Klaus-Dieter Naujok, Harbinger, 510...